THE AMERICAN GAS LIGHT JOURNAL

PUBLISHED WEEKLY, AT No. 42 PINE STREET.

VOLUME XCVIII., No. 19.
Whole No. 1,979.

NEW YORK, MONDAY, MAY 12, 1913.

Subscription, $3 Per Year.
$4 Canada, $5 Foreign.

INDEX TO CONTENTS, PAGE 301. . . . . ADVERTISERS' INDEX, PAGE 24.

Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

LIBRARY OF CONGRESS
MAY 12 1913
SMITHSONIAN DEPOSIT.

KOPPERS LEADS

IN THE

Construction of Patented By-Product Coke Oven Plants Throughout the World.

Koppers ovens can be seen in successful operation in Germany, England, France, America, Austria-Hungary, Belgium, Spain, Russia, Italy, Canada, Mexico and Japan.

Work begins at once at Sparrows Point, Maryland, on two batteries of sixty ovens each, for

THE MARYLAND STEEL COMPANY.

Work, also, begins at once at St. Louis, Missouri, on an up-to-date plant for

THE LACLEDE GAS LIGHT COMPANY.

Surplus gas from Koppers ovens will soon be used for fuel and for lighting the streets of many American cities just as it is now being used in foreign countries.

A By-Product Coke and Gas plant is not merely a proposition for the iron and steel people---it also interests gas people.

H. KOPPERS COMPANY,

5 South Wabash Avenue,

CHICAGO, ILLINOIS.

THE AMERICAN
GAS LIGHT JOURNAL

VOL. XCVIII., No. 19. NEW YORK, MAY 12, 1913. WHOLE No. 1,979.

CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

Wisconsin Service Inspection, by Mr. W. D. Pence..... 301
Proceedings, Ninth Annual Meeting, Illinois Gas Association—[Official Report.—Revised by the Secretary.]—Continued from Page 297..... 303

Second Day, Morning Session—Minute to the Memory of Jeremiah B. Howard—Gas Congress Delegate—Report of Nominating Committee—Election of Officers—In Response—Education as a Means to Greater Efficiency in the Gas Industry, by Mr. C. E Reinicker—Discussion—How to Develop an Ideal Complaint Man, by Mr. W. F. Yardley—Discussion—Committee Appointed.

OFFICIAL NOTICE—
Ninth Annual Meeting, Southwestern Electrical and Gas Association..... 308

EDITORIALS—
Ninth Annual Meeting, Iowa District Gas Association—[Special Correspondence]..... 308
Briefly Told 308

Obituary Note, Mr. Henry Eastland Adams—The Gas Menace—High Pressure Gas Lighting in Paris—"Nation Wide" Advertising—"Chemistry in Gas Works"—Current Mention.

NEW METHODS AND APPLIANCES..... 311

*Flashing Gas Signs—*Photography in the Drafting Room—*High Pressure Regulator—*Gaseous Heating—*Illumination for Outdoor Sports During Summer Nights—Machinery Exhibits at the Panama-Pacific International Exposition—Ideal Illumination—*The Milford (Mass.) Gas and Electric Company's Show.

Recent Patent Issues..... 314
ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 314

Shutting Down the Cooperstown (N. Y.) Works—Gas Plant for Hampton Beach, Mass.—A "Show Me" State Judge on Gas Supply—Ninety Cent Rate, Effective in All-Jersey—Two Personals—Gas Plant Clinton, N. Y.—"Touching" on a Cigarette, etc.—Proposed Plant for Cedartown, Ga.—The Paxton (Ills.) Plant—New Offices, Fremont (Neb.) Company—A Marriage in Lynn, Mass.—Mr. De Long's Promotion—Contracts for the Koppers Company—Pulmotor Distribution, Brooklyn Union Gas Company—Work Underway on the Port Arthur (Tex.) Plant—Mr. Barclow Gets a Stickpin—Personal—Death of Mr. S. A. Jenks—April Meeting, New England Section, N. C. G. A.—Death of Mr. E. C. Bradley—A Youthful Deacon—And Many Other Items.

The Market for Gas Securities..... 316
Meeting Times of the Various Gas Associations..... 316
Public Lighting Table for May, 1913 (Advertising Section)..... 10

Wisconsin Service Inspection.

From a paper describing function of Wisconsin Commission's Technical Staff, by WM. D. PENCE, Member of American Society Civil Engineers and Chief Engineer Wisconsin Railroad and Tax Commissions.

Soon after the enactment of the Public Utilities Law (July, 1907), preparations were made to carry into effect those provisions of the law which related to the establishment of standards of quality and service. The activities of the Railroad Commission up to that time as regards service questions had pertained to the common carriers and the precedents offered little in the way of suggestion as to the methods to be pursued in attacking the problem of service regulation under the new law. Furthermore, little or nothing was to be drawn from practice in other States since the Wisconsin legislation was of a distinctly pioneering character. The matter which seemed nearest at hand was that of gas and electric service, and this was first taken up. Upon making a rapid exploration of the field it was seen to be necessary to gather information as to the quality of service actually being rendered at the time by a few representative companies in the State. For this purpose suitable traveling laboratory equipments were provided, and these facilities were supplemented by instruments from the laboratories of the University of Wisconsin made available through the generosity of the University authorities. The preparatory work referred to was greatly simplified and aided by the spirit of co operation displayed by operating officials and the technical staffs of certain of the more prominent gas and electric utilities of the State. The progress of these preliminary studies was such as to justify the calling of a conference of representatives of the gas and electric utilities of the State at Madison in March, 1908. As a guide for the discussions at this meeting the outline programme given below was issued in advance:

Gas Service.

I.—Accuracy of Meters.
  1. Method of testing.
  2. Limit of error allowable.
II.—Calorific Value.
  1. Importance.
  2. Method of testing.
  3. Minimum value.
  4. Variation allowable.
  5. "Gross" or "net" values.
III.—Candle Power.
  1. Importance.
  2. How defined.
  3. How measured.
    a. Kind of photometer.
    b. What standard.
    c. What kind of burner.
  4. Minimum value.
  5. Variation allowable.
IV.—Composition.
  1. Restriction as to impurities.
    a. Ammonia.
    b. Sulphur—total.
    c. Sulphur as H_2S.
    d. Diluents.
V.—Installation.
  1. Safety.
  2. Adequacy.
VI.—Pressure.

Electric Service.

I.—Accuracy of Meters.
  1. Method of testing.
  2. Limit of error allowable.
II.—Uniformity of Voltage.
  1. Allowable variation from normal.
  2. Interruptions.
III.—Lamp Efficiency.
  1. What provision for lamp renewals.
  2. Voltage.
IV.—Installation.
  1. Safety.
  2. Voltage limits.
  3. Adequacy of wiring.

In addition to the representatives of the Wisconsin utilities there were present at this conference, by special invitation, gas and electrical experts from other States and also an official representative of the Bureau of Standards at Washington. The discussions at this conference were frank and a spirit of entire cordiality was displayed. In the light of the facts and data gathered in the field and of the information and opinions made available from many sources a set of rules was finally drafted and the same embodied in the Commission's Decision (No. U-21), entitled "*In Re* Standards for Gas and Electric

Service in the State of Wisconsin." These regulations consist of some 25 rules under the following heads:

Gas Service: Accuracy of meters, 7 rules; heating value, 2 rules; gas pressure, 2 rules; purity of gas, 2 rules.

Electric Service: Accuracy of meters, 8 rules; regulation of pressure and control of service, 4 rules.

Among the most important aspects of the scientific work performed by the Commission's technical staff in connection with the establishment of these standards of service was that which led to the adoption of the heating value as the primary basis for determining the quality of gas with the entire omission of the candle power basis hitherto commonly used. The rule relating to this feature is given below:

Rule 8.—The company furnishing gas which, within 1 mile radius from the distribution center, gives a monthly average total heating value of not less than 600 B.T.U., with a minimum which shall never fall below 550 B.T.U., may be considered as giving adequate service as far as the heating value of the gas is concerned.

The reasons for abandoning the candle power requirement in favor of the heating value are explained as follows: "Under conditions governing the use of gas in Wisconsin it appears that by far the largest amount is used for purposes such that its heating value is a measure of the serviceable value of the gas. There is a small percentage of gas consumption, believed to be materially under 10 per cent., which is used in open flame burners, and in which the candle power is a measure of its value. Since the gas so used is but a small percentage of the total, and this percentage is continually decreasing, due to the increasing use of the incandescent mantles, it appears that a calorific standard may be of far greater service than is the commonly used candle power standard. * * * For the reasons previously outlined, it appears that the candle power standard, which has been almost universally used in the past for gas measurement, is of minor importance in this State. It is possible to secure a high candle power gas which has but a moderate heating value, and to require companies to maintain a double standard which shall insure both the high heating value and a high candle power, would surround them with such restrictions that economy in manufacture might not be attained; and since but few consumers would be benefited by a candle power restriction, and with this number continually decreasing, no regulations as to candle power are prescribed at this time. It should be added, however, that with a 600 B.T.U. heating standard, and in view of the conditions under which gas is being manufactured in this State, a fairly satisfactory illuminating value is insured."

The policy of the Commission with respect to the enforcement of these and similar regulations established under the provisions of the Wisconsin Public Utility Law, is well indicated by the following statement quoted from the order promulgated: "If any management anticipates or experiences difficulty in complying fully with such rules and regulations, it is expected that application for a modification of the rule or rules with regard to which difficulties are encountered will be made to the Commission; but until a modification of any rule or regulation herein prescribed has been expressly authorized by the Commission, the gas and electric companies will be expected to comply strictly with the terms of every rule and regulation ordered herein. It is possible that certain plants are operated under conditions which make it impracticable or not to the best interest of the public to meet all the requirements of all the rules. Under such conditions it devolves upon the utility to show to the Commission, by complete and convincing evidence, that a modification of some rule or rules should be made. Suggestions and criticism are at all times welcomed by the Commission."

The preliminary investigations had accomplished much in the direction of establishing the routine of the technical work of the field staff engaged in the inspection of gas and electric service, besides affording a strong suggestion as to the extent of the force required to administer these and other regulations involving the use of a technical staff. It was early seen that to adopt the drastic basis of enforcement would require a large outlay in the way of field staff and laboratory equipment, and the decision was made to adhere to the policy of moderation which had pervaded the previous work of the Commission, as reflected in the paragraph last above quoted. It was also seen that undue pressure at the outset would discourage and possibly even disable certain of the smaller and weaker utilities which ought to be given reasonable time and assistance in adjusting themselves to the change of situation brought about by the enactment of the utility law. Besides, the opportunity to stimulate, on the part of the utilities, the habit of self-criticism on a sound and scientific basis and to cultivate the element of pride and satisfaction in the rendering of a good quality of service were not to be wantonly sacrificed. The wisdom shown in the adoption of this policy on the part of the Commission has been amply confirmed by the results attained in the course of the 4 years and more since these rules were first adopted.

During the fiscal year ending June 30, 1912, the routine field work of this department relating to features associated with the standards of service included the following items:

Gas Service Inspections.—Complaint gas meter tests, 16 tests in 2 cities; 72 service inspections and 473 heat unit determinations at 32 gas plants.

Electric Service Inspections.—Complaint electric meter tests, 44 tests in 10 cities; electric service inspections, 381 in 260 cities; commercial electrical testing (master meters, etc.), 37 tests at 36 plants; modifications and exemptions of rules of electric service, 31 cases.

The functions of the technical staff touching the regulation of the public utilities, mentioned in the foregoing review, do not include certain activities of a somewhat miscellaneous character, some of which involve matters of much import, and only one or two of which need be mentioned by way of illustration. The electrolysis of water and gas mains, due chiefly to stray currents, from electric railways has been the subject of much investigation, under the direction of Prof. C. F. Burgess. These surveys have had the two-fold purpose of throwing light on the extent of the depreciation of the piping system due to this cause for use in valuation work, and of indicating what steps, if any, should be taken, looking to the control of this destructive agency. The problem has been approached in a non-partisan spirit with a view of giving fair consideration to all interests, and of avoiding the partisanship which appears to have entered into much of the discussion and investigation of this important subject in the past. In fact, in the investigations hitherto made, associated as they have have largely been with litigation, pending or anticipated, there has been little or no opportunity or incentive to view the matter in its broader aspects. At the present time this problem is presented in unique form before the Wisconsin Commission. With rate adjustments pending for both the gas and water properties, one privately, the other municipally owned, and with regulative control of the practices of the traction system, an opportunity is presented to work the matter out with due regard to the interests of all, including that of the public which pays for the service rendered, and hence has peculiar rights which hitherto have been lost sight of in the discussions of this matter. Other instances of miscellaneous technical service touching upon the regulation of public utilities are extensive field studies directed to the establishment of standards of street illumination; studies to determine the limits of size of towns for the profitable establishment of gas plants; laboratory studies to determine the basis of accuracy of water meters; standards of construction for high potential transmission lines; extent of damage to telephone systems due to sleet and snow storms; investigations of failure of dams; investigation of failure of waterworks standpipes; analytical study of the practices of Wisconsin electrical utilities relative to supply and inspection of incandescent lamps, etc.

The attitude of the Commission's engineering staff in dealing with those who are directly responsible for the operation of the various utility properties about the State might perhaps be supposed to be that of the more or less confirmed critic, but the fact is that pointed criticism and even drastic treatment are made use of only where the circumstances call for such action. It may be stated, as a general proposition, that the relation between the Commission's inspection staff and the plant operators is, almost without exception, one of mutual assistance and satisfaction.

The process is distinctly cumulative in its efficiency and helpfulness. These inspectors are, in the first instance, chosen with particular reference to their qualifications in operating matters, and necessarily they have an opportunity to observe and analyze the routine problems of the plant operator under a wide range of actual conditions. Moreover, the special training ground of the Commission's staff is by no means restricted to the limitations of a single State, for the reason that to a certain extent it has been found practicable to respond to an ever-increasing demand from other States, both from municipal authorities and others, by releasing individual members of the staff for brief intervals of time for service in attacking similar problems which are continually arising throughout the country. The members of this staff engaged in this work in other States necessarily acquire added impetus and enthusiasm in resuming their duties

on the staff of this Commission, and, moreover, their efficiency in the adjustment of points in dispute between the utilities and their patrons is found to be promoted in no small degree, due to their having such contact through occasional professional engagements outside the State as will give them opportunities to more thoroughly appreciate the viewpoints of the public, the utilities and the governing bodies.

In this connection it should be added that the non-partisan attitude of the Commission and the staff which serves it in these technical matters is stimulated by the fact that in Wisconsin the State-wide control is administered alike to all utilities, whether publicly or privately owned.

It goes without saying that the owners of small utility properties, either municipal or private, rarely make provision on their own account for expert advice for the guidance of their employees in direct charge of plant operation; and even in the comparatively few instances where the owners of small plants do independently employ expert advice, the professional service is of a non-continuous character, and, unfortunately, does not always escape the commercial taint. It will, of course, be agreed that professional advice wisely purchased should be paid for as a legitimate operating expense by those who are directly benefited, viz, the purchasers of the service rendered by the plant. Whether the expense involved in providing continuous professional service along the lines practiced in Wisconsin should be paid for directly as a local operating expense, or indirectly through a technical staff controlled by the State Commission, is believed to be a matter of great practical importance. The use of a State technical staff, having a State-wide range, has led to an extensive increase in the intelligent and efficient use of high-grade professional advice employed independently, and usually voluntarily, for the purpose of increasing operating efficiency along lines suggested by the enforcement of the Commission's standards for adequate service.

With increasing frequency the Commission is called upon for advice in matters requiring services of consulting engineers. Although preliminary suggestions as to plant improvement and the like are sometimes submitted, it is the general practice of the Commission to recommend that such improvements be carried out under the direction of competent engineers engaged in private practice. Under this procedure, the Commission often receives requests for specific recommendation of specialists known to have the qualifications required to render the particular service desired. It is believed that the Commission has been able to render this delicate service with full justice to all concerned. It is a matter of no little interest that requests of this nature are frequently received, especially from State and municipal authorities of other States.

[Official Report.—Revised by the Secretary.—Continued From Page 297.]

PROCEEDINGS, NINTH ANNUAL MEETING, ILLINOIS GAS ASSOCIATION.

Held in La Salle Hotel, Chicago, March 19 and 20, 1913.

Second Day—Morning Session.

The President having announced that the first order was new business, the Secretary read an additional list of new members, and said: During the past year many changes have taken place in our membership. Last March we had a total of 210. Four deaths were reported to the Secretary during the year: One Honorary, 1 Active and 2 Associate; resigned, Active, 19; Associate, 4. Last year we elected 26 Active, 8 Associate and 2 Junior members. The December ballot resulted in the election of 6 Active, 32 Associate and 4 Juuior members. Yesterday we elected 21 Active, 22 Associate and 2 Juniors. This of to-day results in the addition of 2 Active and 4 Associate members, bringing the total to 183 Active, 116 Associate and 13 Juniors, a grand total of 312.

On motion the names submitted were balloted upon, and the nominees were declared elected to membership. The Secretary further said, several invitations had been extended to the members, one of which was to examine a mantle testing machine, invented by Mr. Haines, of the Department of Electricity, City of Chicago, which device was on exhibition in the basement of the City Hall. He also reminded them respecting the visit to the Division street Station of the Peoples Company in the afternoon.

The President called for reports of temporary committees. Mr. J. H. Eustace, from the Committee on Resolutions, reported the following

Minute to the Memory of Jeremiah B. Howard.

Whereas, Destiny has removed from our midst our only Honorary Member, Mr. J. B. Howard; and,

Whereas, The genial personality and lovable disposition of "Uncle Jerry" is greatly missed, but fondly remembered by all the gas fraternity; therefore, be it

Resolved, That we, the Illinois Gas Association, here in convention assembled, pause to record the loss of one whom we all regarded as an inspiring and helpful friend; and,

Resolved, That a copy of these resolutions be sent to the family of the deceased. Respectfully submitted,

J. H. Eustace, Chairman,
D. McAfee,
W. E. Steinwedell.

On motion (seconded) the report was adopted by (standing) silent consent.

The Gas Congress Delegate.

The President called attention to the fact that the Association had by vote directed the President to name a delegate to the proposed Pacific Gas Congress. In view of the importance of this he would suggest that the naming be left to the Directors, and that he would be glad to entertain a motion to such effect.

On motion of Mr. Yonts (seconded by Mr. Rice) the suggestion of the President in the above respect was recorded as the determination of the Association.

The President called for the

Report of the Nominating Committee,

which was thus submitted by the Chairman (Mr. C. W. Bradley) thereof:

Gentlemen: Your Nominating Committee begs leave to submit the following named gentlemen to serve as your Executives for the ensuing year:

For President.—Mr. W. F. Barrett, Chicago.
" *Vice-President.*—Mr. L. H. Johnson, Aurora.
" *Secretary.*—Mr. H. H. Clark, Oak Park.
" *Directors.*—Messrs. F. W. Reimers, Rock Island, and F. E. Luther, Chicago.
For Representative to the American Gas Institute.—Mr. H. O. Channon.

Election of Officers.

On motion of Mr. Rice (seconded by Mr. Johnson) the report was adopted and the Secretary was instructed to cast the ballot of the Association for the gentlemen named. The Secretary subsequently declared that the instruction had been carried out, and the President announced the result, remarking that the Association would appreciate a word or two from the new executives.

In Response.

President-elect Barrett said he wished heartily to thank all the gentlemen for the honor conferred and assured them he would do all in his power to maintain the high standards of the Association, always remembering that he expected their co-operation to that end.

The President—I am sure those of you who know Mr. Barrett know that the Association is not going to suffer next year.

Vice-President Johnson said: Mr. President and gentlemen: Let me assure you that this honor is appreciated. I am proud to serve as an officer of the Illinois Gas Association, and will do all that I can for it. While the duties of Vice-President are not very arduous, nevertheless I will find something to do, and rest assured that what I can do will be heartily done.

The President—We have now gotten to Mr. Clark. We know what he can do by what he has done. We all know that the work of our Secretary is frequently trying if not irksome, and we also know that he did not shirk it. And while I am sure that he cannot do it any more efficiently than it was done by him the past year, possibly familiarity with it may make the way easier.

The Secretary replied that he certainly appreciated the honor, and repeated his remarks of a year ago, that he would always have the interests of the Association at heart and do his best. However, he was not quite satisfied. He had but 96 new members, and he looked for the even hundred.

The President thereupon introduced Mr. C. E. Reinicker, of Chicago, who read his paper on

EDUCATION AS A MEANS TO GREATER EFFICIENCY IN THE GAS INDUSTRY.

Introduction.—In presenting this paper it is my intention to divide it into three parts, in order to apply the broad principle of education in a logical way to the company engaged in the manufacture and distribution of gas. Starting with the theoretical necessity for industrial education, I will endeavor to carry the subject through its practical application to a gas company's needs, to specific instances of actual gas company schools. In dealing with the subject, I wish it to be clearly understood that this paper does not recommend the teaching of workmen along lines that will do them no good, nor is it the endeavor to inflict on them a college education, but it does recommend the proper education and training along practical lines, of the men who go to make up the organization of a gas company.

The Human Element.—The ultimate result for which all progres sive public service corporations strive is the providing of efficient service. The energy of the whole organization is directed towards this end, for it is upon the service rendered that the life and profits of the undertaking are dependent, this being especially true where there is competition. In the production of this service two agents are constantly used; namely, mechanical movements and human endeavor.

Every mechanical unit in the equipment of a gas company is closely watched, and when it fails to develop the required efficiency it is replaced by some better machine. Science and invention are continually advancing the better machine, and wherever possible a mechanical movement has replaced human endeavor. Notwithstanding the great strides made along the mechanical lines, we are still largely dependent upon the human element in our undertakings. In fact, in some cases we are entirely dependent upon this agent, and the development of this necessary adjunct has not been given the consideration it requires.

In order to accomplish the task of bringing this human element, man, to a state where it be possible to raise his standard, it is necessary that he be given to understand his importance in the operating end of the industry. He must be awakened, since the power of development, eventually comes from within. Both he himself must realize, and we must realize with him, that, in many cases he is the gas company. The public, only having dealings with this man, has reflected to it, by him, the attitude of the company, and is quick to form its opinion by the conduct of the representative. The mind of the man must be made to realize that "service" is its watchword.

I should like to quote an extract from an address delivered at the recent centennary celebration, by the Hon. George B. Cortelyou, President of the Consolidated Gas Company, New York. Mr. Cor telyou said, in part:

"The shortcomings of a supply as to pressure, candle power effici ency and other essentials, are apt to be a matter of moment, and, when remedied in a gracious manner, leave no rankling; but the shortcomings which are evident in poor service, brought about by inattention, neglect or slipshod methods, are not easily effaced from the consumer's mind; so I say, that this word, 'service,' should be writ large in the mind of every worker for a public service corporation."

Couple this with a statement lately made by the President of the United States, the Hon. Woodrow Wilson, that, "Profits are legitimate only when they come from service." In these two statements we have the desired connection between the worker, the service given, and the necessary profits, expressed in the most concise manner possible.

Money Involved.—When we consider the money represented in the human element of our business, we should have some conception of the fertile field of development which awaits our attention; the source from which we can derive our greatest efficiency. I am sure that this statement will be borne out by the following figures, which are very conservative. The man to whom we pay a wage of $50 per month is usually of a low grade. The investment at 4 per cent., which pays this man his yearly salary, is $15,000. The $75 a month man represents $23,000, and so on, *ad infinitum*. We know that a 1,000,000 cubic foot gas holder costs approximately $100,000, yet do we realize that the money invested to pay the salaries of four $75 per month men would very nearly pay for this holder? Now compare the possibilities of the development of the efficiencies of these investments. Our holders, or in fact any mechanical agent, can never develop a greater efficiency than that for which they are designated; but the human machine has, in a reasonable sense, no limitation as regards development. Therefore, in the consideration of the sums of money which every public service company pays to its employees, we must realize that it is to the human element that we must, of necessity, turn our attention.

We must recognize the existence of men who are in the class of unskilled labor through lack of opportunity or of foresight, or due to other circumstances not under their control. The ranks of this unskilled and low grade labor are over-crowded, and industry suffers for want of skilled workmen. Many, by disposition and general makeup, have to fi d their livelihood in such unskilled labor, while, on the other hand, many can be trained in a comparatively short time to semi skilled or skilled special labor. Out of this situation has grown the demand for a system of education which shall meet the needs of the workers in the industrial classes, and it is with this education, applied to our special branch of industry, that we have to deal.

Growth of Industrial Education.—The wide and rapid growth of interest in "Industrial Education" is an indication that every branch of industry has realized the need of training the workmen, the lowest in order of pay in the organization, but the most important unit in the whole situation. As early as 1902, commissions were appointed to investigate the subject of industrial education in these States: Connecticut, Maine, Maryland, Massachusetts, Michigan, New Jersey and Wisconsin. The following list of firms and corporations having apprenticeship schools will bear out the statement in the preceding paragraph:

General Electric Co., West Lynn, Mass.
Western Electric Co., Chicago.
Westinghouse Electric and Manufacturing Co., E. Pittsburgh, Pa.
Westinghouse Air Brake Co , Wilmerding, Pa.
Browne & Sharp, Providence, R. I.
International Harvester Co., Chicago.
Yale & Towne Manufacturing Co., Stamford, Conn.
R. Hoe & Co., New York.
Geo. V. Cresson Co., Phila., Pa.
Fore River Shipbuilding Co., Quincy, Mass.
American Locomotive Co., Dunkirk, N. Y.
Cadillac Motor Car Co., Detroit, Mich.
Lakeside Press, Chicago.
North End Union, Boston, Mass.
Solvay Process Co., New York.
Manufacturers' Association, Bridgeport, Conn.
Baldwin Locomotive Co., Phila., Pa.
Pennsylvania Railroad, Santa Fe and N. Y. Central Railroads.
Crane Company, Chicago.

The question naturally arises as to whether these various corporations have established these courses merely from the desire to advance the individual. Although it is evident that the individual is benefited, the aim of the entire scheme is to increase the efficiency of the organization and to cut down the cost of production. In other words, to increase in a steady ratio the efficiency of each individual unit, and in the advancement of the individual unit render the whole organization more efficient, reduce the loss of energy, caused not so much by the fault of the individual effort as it is by the lack of uniformity in the direction of the individual effort. By the careful training and education of the individual members is this definite end approached, and the whole organization is built up, the sole object having been to reduce human energy and capability to legitimate profit.

In the preceding paragraph a statement was made concerning the misdirection of individual effort. It is well understood and needs no comment that the fundamental necessity in the desired building up of an organization lies in the employment of men who have certain capabilities in the work in which they are engaged. That they have a reasonable amount of latent capability is obvious, since it is manifestly impossible to direct the energy of an individual if that individual has no aptitude for the work. The proposition then narrows itself down to the directing of the endeavors of a man, or a group of men, as the case may be, in the channel calculated to produce the best results.

In any scheme of education, therefore, the first step should consist of the obtaining of men who are capable of being educated, and also the hiring of those men who are willing to be taught the methods determined upon by the employing concern as being the best. The

live superintendent has no use for the "Old dog that cannot be taught new tricks;" and, for that matter, for the young man who is not willing to learn. It must be accepted as a self-evident truth that, in order to maintain industrial supremacy, there must be a thorough understanding and co-operation between employer and employee to the end that the skill of the latter may be utilized to develop and increase the organized enterprise of the former.

Development of the Organization of a Gas Company.—In a figurative sense we know that, if it were possible, the owners of the various gas companies would carry on all of the operations of the business themselves. They would make gas and distribute it; they would lay mains and run services; they would set meters and connect appliances; they would, in addition to all of this labor, do all of the office work themselves. They would then be sure that the work was being conducted as cheaply and as expeditiously as possible. This being manifestly impossible, these owners have had to entrust the carrying out of these various operations to other men; their managers, engineers, superintendents, etc., who, in turn, have working under them their forces of men necessary to the proper conducting of the business. These latter are the men upon whom the owner is eventually dependent for his profit.

The owner is, therefore, entrusting his business to the hands of those to whom he pays his money to do his work, and in many cases he only comes into personal contact with a few of his department heads. These heads are, by training or experience, best able to carry out his wishes or his policy in a manner determined by the best practice. He trusts these superiors to produce desired results, and to conduct the work in the same efficient manner as he would himself. Therefore, these men occupying the higher positions in an organization must see to it that the forces under them carry on the work as thoroughly and as economically as possible, and they must acquaint that force of the best manner of conducting the work in accordance with the policy of the undertaking.

In large companies there are many departments, each doing some specific thing, while in smaller companies a few men may be engaged in all classes of work. In either case the result is the same; each individual man must be well equipped to fulfill his task. On the workman's ability must the whole organization stand. He is the corner stone, and if one man is weak the whole operation of the company is impeded. Our first point of attack in a gas company organization for the upbuilding of its personnel must be in the ultimate workman, this being the same weakest point in a gas company, as it is in every other industrial branch of organized industry. No matter how clever a department head may be he is absolutely helpless if he has a body of men under him who can not carry out his ideas in an efficient manner.

Application of Industrial Education to a Gas Company.—There can be no doubt that, in the end, the best education which a man can receive will be that which will be derived from constant contact with his work. Experience has been and always will be the best teacher, and by making mistakes a man, if he be of the right caliber, will grow proficient, because such a man will profit by his mistakes. However, in the business of a gas company we cannot afford to make too many mistakes at the expense of the customer and the company's good will. It behooves us, therefore, to try to eliminate the mistakes; and, by a proper teaching of the fundamentals of a man's work, we can reduce these mistakes. It is necessary, however, that work of the supplying of gas must be carried on, so we cannot interfere with the work of the organization to teach the "Tricks of the trade." Because of this, and also as a means of economy, the educational efforts can be conducted away from the actual work with much more readiness.

In this more or less theoretical education there are two avenues of procedure to be considered. Viz., first, entirely by lectures, which shall embrace all operations of the company; and, second, by specific schools of instruction wherever possible, or by lectures where these actual scoools are impracticable. Embodied in these lecture courses, in either instance, practical demonstrations can be made illustrating certain points which the lecturer desires to make. These lectures can be either along specific lines or along general lines; the subject can be either on fitting work or how to make gas. In my estimation these lecture courses are ideal for instruction in work which does not require mechanical skill. The specific school offers the logical place to teach these mechanical branches without interfering with shop routine. There can be installed facilities for actually carrying on the work under the constant direction of experienced men. It may be possible that, in the smaller companies, the lectures would be more valuable; but in companies where any number of men will be instructed in the same work, more thoroughness will result when the operations are actually performed by the student.

Groups of Employees.—In our industry all of the employees fall into one of four groups: First, the station men, or gas makers, valve men, etc.; second, the distribution men, the fitters, street men, etc.; third, the sales' force; and, fourth, the office men, this division consisting of the window clerks, bookkeepers, etc. Of these four classes the last three should be given the greatest consideration as far as education is concerned, since they are the employees through which the company reaches the public. As I called attention some time back, they are the gas company.

The station men are confined within a comparatively small area, and never come into contact with the public, save in the very smallest companies. They are always under the eye of some superior, and are seldom called upon to display any initiative, or to do anything out of a regular routine. Any changes in that work's operation are carefully gone over by those in charge, all details being planned for the routine of the change, the workman merely putting the change in operation in a mechanical way. These men are usually those who have grown up in station surroundings, probably having started in as yard men or stokers. It is evident, therefore, not having any connection in the application of the policy of the company in an individual sense, they do not require the same teaching, or the amount of teaching, that should be devoted to the other three groups. These men could attend lectures on general subjects, however, so that those who desire to advance themselves could do so, because the writer believes that every man should be afforded the opportunity to absorb knowledge. In a general sense, these men are of that class who are perfectly well satisfied with their condition. Because of this temperament, and also since they are not doing poor work at the customer's expense, it is unnecessary to take them into consideration in an educational scheme.

In dealing with the window clerks—*i. e.*, those clerks who come directly into contact with the public in the applying for gas, the payment of bills, the handling of complaints, etc.—we should remember that the main point to impress upon them is the handling of the public with tact and courtesy. This is especially true with reference to the complaint clerks, since right here the company can make a booster or a knocker out of the complainant. However, this phase of the necessary equipment of these employees and all others of a public service corporation has been so thoroughly written about that I will not enter into the details.

These clerks must of necessity have been thoroughly broken in on the routine of their positions, but great benefits will be derived by providing some means whereby these complaint clerks can be enlightened as to some of the sources from which these complaints originate. By means of practical demonstrations they can be shown the workings of a meter, the faults that can develop in an appliance or a lamp, etc. By such an insight the clerk can much more intelligently handle the dissatisfied customer, make the discussion much easier for both of them, and in many cases allow the customer to leave with the idea that "that man knows his business." This end can either be gained through talks by some one who is anthority on these subjects, or, if there is a school of instruction established, even better results will result in allowing him to spend some time there.

Not only should these clerks but all others be given some idea of the business as a whole. This could be done by a series of talks on the various phases of the industry to which they could all be invited to attend. These talks will result in these men having some idea of the importance of their work, and they may be led to realize that they are of some importance in the organization, even though this may not be the case. It is not easy to work as a machine, to be a mere cog in a machine, where there is no outlook, not any broadening possibilities offered. This narrow outlook has a deadening effect upon individual efficiency, and if we can make these men realize that their work is not a meaningless routine we have a better organization, one that is loyal to the company in social life as well as in business life.

For the salesmen, solicitors, etc., the most feasible scheme of education lies in the lecture idea. By means of these talks, coupled with actual demonstrations, the new appliances to be carried can be explained to the selling force. Salesmanship can be explained by experienced men, and experiences dealing with the daily work can there be given to mutual advantage. By means of these talks the commercial agent or the sales' manager can come closer to his forces to great advantage to both the men and to himself. He can bolster

up the man, can give his instructions, and can also become familiar with their troubles. In too many cases of even moderate sized corporations the immediate relationship between the employer and employee is lost, this being a loss to both their common enterprise as well.

The important branch of the organization of the distribution department, from our point of view, lies in the fitting work. The street man occupies much the same position as does the station man of whom we spoke some time back. The street man, however, must be taught civility; but this can best be accomplished by making a shining example of one who is uncivil.

In the fitting work of a gas company we require a man who shall be different from the ordinary conception of a fitter. In addition to his mechanical skill he must have knowledge of the handling of gas, this being especially pronounced when the company for which he works distributes at high pressure. This one reason is the cause of so many fitters having been unable to hold positions with gas companies after they have obtained them. We, therefore, have this training to instill into their work, in addition to teaching them the best possible way of completing a job to the least annoyance of the customer. This latter is of more importance to the gas company than almost any other one thing, for here enters the necessary co operation between departments, since if a man does a poor and unworkmanlike job on the customer's premises, all of the good work which the other departments have accomplished will count for nothing.

In the teaching of these men the actual school offers the best solution to the problem. I do not think that the lecture idea can begin to develop the thoroughness of mechanical training that is offered by having the man actually do the work under an instructor. Of course, courtesy and civility can be dwelled upon, so the school offers as good, if not a better, chance to instill these principles into the man's mind. However, any means of instruction is an advantage, and if it be impossible to carry out the school idea, then the lecture idea should be put into operation. It is in this one field that the greatest opportunities exist, and if we can train up a fitting force that shall do its work in a thorough and businesslike manner, we have accomplished a permanent good. The younger we start to train men the better it will be for us.

Specific Gas Company Schools.—Passing now to the specific gas company schools, it might be well to describe the means provided for the education of the employees of three gas companies; namely, the Consolidated Gas, Electric Light and Power Company, of Baltimore; the Consolidated Gas Company, of New York; and the Peoples Gas Light and Coke Company, of Chicago.

In the latter two instances only the schools of instruction in fitting work will be dealt with, while in the Baltimore Company the whole educational scheme will be described. The New York and Chicago ideas are somewhat different from the Baltimore method in conducting their educational campaigns. In Baltimore they depend wholly ugon the lecture idea, while in the other two mentioned cities the lecture idea is superseded by actual fitting schools in those branches where it is necessary to teach the mechanical work. Since all lecture courses in every gas company are conducted in much the same manner, the description of one will suffice for all. On the other hand, each school devoted to the teaching of specific mechanical work, is different, and the description of one does not cover the other.

The Baltimore Idea.—In the Consolidated Gas, Electric Light and Power Company, the lectures and talks are delivered by members of the organization to small groups of the employees. All departments of the Company are embraced, the groups being organized from the various departments. The talks are informal, and are accompanied by the demonstrations of the various appliances that are under discussion. The talks are both specific and general, and, after the speaker finishes, he invites questions, and discussions are frequent and profitable. The talks are conducted at night at the Front street shop, and there are no obligations impressed upon the men for attendance. I have been informed that there have been approximately 1,200 men in attendance at these talks, and when it is considered that there are about 2,000 persons in the whole organization, it seems that there is great interest on the part of the men for their own welfare.

The New York School of Instruction.—The Consolidated Gas Company, of New York, conducts a school of instruction for the men of the meter department at the 102d street shop. The school is the outgrowth of attempts made to obtain satisfactory fitters, and to raise the standard of work in this branch of the Company's work. All of the classes are conducted in a large room under the direction of a foreman, he being assisted by other instructors. The room is of sufficient size, and has the necessary equipment to accommodate classes of indexing, complaints, range and water heater connecting, meter setting, etc. The courses in stove repairing are carried on in the stove repair shop of the division. The mechanical features are very interesting, but are applicable only to the specific work of the New York Companies.

The school is closely connected to the division shops, the routine of sending men being as follows: Young men, from 18 to 21 years of age, are hired from any source. They are placed in a division shop, and tried out for a varying length of time, this period depending upon their natural ability and brightness. While in the shop they are put on all classes of work, and are also sent out on the division to act as helpers. If these young men are of sufficient intelligence, and show aptitude for the work, they are eligible for the course in indexing, their names being placed at the bottom of a list of those waiting to go to the school. Since the indexing is carried on under the supervision of the various division shops, this branch offers an excellent means for the starting point of a regular routine of advancement.

When a man goes to the school for the first time he is given a rating, and he must return to the shop and wait to be again rated at the school. In any event he must qualify at the school on his second visit, else he is dropped[1] from the Company's roll. When he is finally qualified as an indexer, he works along this line and is prepared for his next course at the school. While acting as an indexer he may become qualified as a fitter helper, and when the opportunity arises, goes out on this latter work. Thus, a continuous method of progression of all of the men is obtained, and the superintendent always has men to fill vacancies as they occur. The ultimate result has been the building up of an organization capable of carrying on the work of the Consolidated Gas Company in an efficient manner.

The Chicago Fitters' School.—The Fitters' School of the Peoples Gas Light and Coke Company occupies a building devoted entirely to this work. In this building are reproduced all classes of complaint causes; here are all styles of ranges and water heaters for connecting and adjustment; lamps of all kinds for hanging and maintenance; automatic water heaters, hotel and restaurant appliances, meters of all sizes, etc. There are two instructors at the school at all times, who are experienced gas men and they c arefully watch each individual student. For special courses special instructor are obtained. The method of conducting the school, is, in brief, as follows: A man makes an application for a position with the Company as a fitter or as a helper. If for a fitter, and if his general appearance is favorable, he is first sent to the school, and is given some actual mechanical work to do. He may be given a water heater or a range to connect, running the necessary fuel line and setting the meter. He may be given one appliance to connect and several to adjust, and some difficult jobs to cut out pipe for. He is also given certain educational tests to determine his ability in reading, writing and his knowledge of simple mathematical problems. The primary object is the determination of his mechanical ability and his general characteristics.

If he applies for the position of a fitters' helper, he is given the same series of questions to answer, and various other tasks of a very simple nature are performed by him, the main idea being to determin his willingness to work at any given task. These, and all other men who attend school, for any reason, have their sense of smell tested, the necessity being obvious, since a developed sense of smell is necessary for a man handling gas. By means of the various examinations of applicants, many undesirables are prevented from obtaining positions with the Company, and later causing trouble which results in their discharge. Not only is the Company thus protected, bnt also the customer is protected, and incidentally the man himself is protected.

In the conducting of courses for instruction an effort is made to prepare the men for the seasonable work of the Company. By this is meant courses which closely precede the special work which each season of the year brings forth. In the early spring all of the fitters and helpers are instructed on appliance installing; for some it is a review, but for others it is, in some phases, new ground These men actually connect up appliances. They run the fuel line and set

1 Since this paper was printed the author received a letter from Mr. Turner, Superintendent of Meters, Consolidated Gas Company, in which Mr. Turner said: "The information you received from us was to the effect that very few young men have qualified on their second visit. That the average number of visits on their first study was six, and that these were not dropped from the Company's roll until they had failed several times, and had failed to qualify after every effort to teach them had failed.—Eds.

meters, making out the necessary tickets. They are drilled on rules, and are given pertinent instruction regarding their conduct on a customer's premises.

In the early fall similar classes are conducted in lamp work and in the later fall, classes are conducted in complaint work; all men, whether fitters or street men, who are expected to act as complaint men, are drilled at the school. By means of trapped service and risers, leaks, poor supply, binding meters, etc., these men are instructed and reviewed in this particular branch. At other times classes in stove adjusting are conducted. Helpers are trained for fitters and fitters are reviewed in their weak points.

FITTERS' SCHOOL Name.....Date.....
Shop.....Occupation.....Rate .....
Course in Examination for

Ambitious Bright Neat Sense of Smell

	Time on Work.	Mech. Ability.	Char. of Work.	Rules.	Tickets	
Elementary						
Lamp Maintenance						
Indexing						
Measurements						
Meter Maintenance						
Appliance Connecting						
Appliance Adjusting No. 1						
Appliance Adjusting No. 2						
Lamp Installing						
Complaints						
Complaints (no gas)						

Remarks.....

Diagram No. 1.

Diagram No. 1 is a form of report card sent through on every man who attends the school. This specific information is of value to the divisional superintendent, providing for him a helpful means of sizing up his men. Another phase of the adaptability of the school lies in the testing of all men who are to be raised in rate or in position. These tests are along certain prescribed lines, and no matter how much the man knows beyond the requirements of the grade to which he aspires, he is required to be familiar with all up to that grade. If a man fails to qualify, or is weak in some particular item, a report is sent to the shop, and if the ideas of the shop and of the school do not agree, the matter is discussed between the superintendent of the division and the school and a decision reached.

Many conditions of service are faithfully reproduced at the school, and whenever a new cause of complaint is found on the division, attention is called to it at the school, and if possible the condition is reproduced. The whole idea of the school is to aid the shops in the instructing of their men at their work. The shops and the school work in harmony, the shops looking upon the school as being their school.

In the 2½ years of operation, the total attendance, up to January 1, 1913, was 1,664 men, 1,026 of these being there for the first time. During 1912, 837 men were taught at the school, 416 being there for the first time. The men stay at the school for varying lengths of time, depending upon their efficiency when they were sent for instruction; but only 1 day is spent in the testing of a man. When the examination is that of an outsider applying for a position, the day is spent on his own time, all of the Company's men being carried on the school roll.

The method of operation is, therefore, different from that of New York, caused by the difference in the organization of the street department, and the difference in the manner of conducting the work. The result is the same, however, the end being the increasing of the efficiency of the daily work of the men, by teaching them the requirements of the individual gas company.

Conclusion.—The writer has endeavored to treat the subject in a logical way. The aim has been to develop the idea of education as applied to service. As Dr. Galloway, in his Atlanta paper, said, "If the gas companies want their representatives to stand for the big idea of public service, they must instruct their employees so that they may gauge that idea. The company must see to it that the community is not better informed than its representatives. It is quite possible that a company's advertising may be more conspicuously displayed before the public than before its employees. It is, therefore, also possible that the consumer's may read and believe 'the public be pleased' signs of public service corporations, while the employees of the company may remain in ignorance of either the sign or the methods necessary to carry out the policy."

Therefore, without this development of the idea of service by the education of our employees, not only in the mechanical sense, but also in the "public be pleased" sense, the company is going to be the loser. No matter how carefully the company watches its intercourse with the public, no matter how fairly it intends to treat the consumers, all of its good intentions can be counteracted through an incompetent or uncivil employee. The good work of one department can be nullified by the carelessness of an employee of another department, and once a customer becomes dissatisfied, it is a difficult matter to regain the lost ground. In conclusion, therefore, I desire to impress upon everyone the necessity of having a force of men, rendered efficient by education and training, by quoting the words of President Mulholland, of the Indiana Gas Association, in his inaugural address of 1913:

"Are we not operating our business in restraint of our own trade by failure to see that the company has only such employees in office, works, shops, fitting, maintenance and street departments who are always striving to furnish the best attention, best quality of product, most efficient work and service, and best and most courteous treatment and earnest consideration to and of the necessities of our patrons, anticipating their requirements whenever and wherever possible. In a word, are we not conducting our business in restraint of our own trade by failing to bend, not only our personal energy, but by not insisting upon all employees doing the same, to the end that we may be looked upon as an institution that furnishes not only gas, but service also, thereby securing the reputation of being a business in which profits are legitimate, because we give full value in the gas and service furnished."

Discussion.

The President—Mr. Reinicker's interesting paper is before you, and he is ready to answer any questions you may ask him.

Mr. Yonts—Has Mr. Reinicker any method of teaching salesmen?

Mr. Owens—I would like to answer the question in regard to the instruction of salesmen. For the past year I have been a member of the Board of Educational Control of the National Commercial Gas Association. The Committee meets once a month, sometimes oftener. We were very much handicapped from the fact that the First Course (started 2 years ago) was the first thing of its kind attempted in the industry, and it was not applied as well as the Course was constructed. The gas companies didn't handle the Course intelligently, so that when Course No. 2 came out the Board decided to have classes formed and lecturers appointed, working it just as though men were going to school. The enrollment in Class No. 2 was much larger than in Class No. 1, and company meetings are held all over the country. Now the Board wishes to go a great deal further. It wishes to apply correspondence instruction to shop instruction. This paper deals exclusively with industrial education. Now, teaching salesmanship is vocational education, for it covers the whole field. While it is not technical, a man to be a good salesman must understand manufacture and distribution, and the theory of business as well. The Committee hopes in time to have an experimental and a testing station, a director of education, travelling instructors, and add to the number of gas scholarships in the country. There are only two gas scholarships in the United States, one supported by the Michigan Gas Association, the other by the Pacific Coast Association, and you all know the work that has been accomplished through the former. Every man that has gone from Ann Arbor has secured a good position in the gas industry. The Pacific Coast Gas Association's course will begin next year. One thing to be done, if you go into vocational work, is to get in touch with the other fellow who is doing things. Write to the Board of the National Commercial Gas Association; and if your men want to take work along manufacturing lines, get in touch with the American Gas Institute The work is being carried on for you and it would be a great thing for the industry should you make use of it.

Mr. Schiller—The last speaker said Mr. Reinicker didn't cover salesmanship. The Company here has depended somewhat on a combination of methods. The salesmanship training has been handled somewhat differently. We depended on our sales' department organizing its own schools. This is primarily intended to educate the bottom labor, or what is ordinarily regarded as such, the fitters; and that has been our aim. We don't feel that a school such as we have is applicable in its entire scheme to smaller companies, but it may be somewhat instructive to know how we handle the situation. A point

(*Continued on page* 310.)

THE AMERICAN GAS LIGHT JOURNAL

Entered at the Post Office, New York City, as Second-Class Matter.

Published weekly at 42 Pine Street, New York City.

Telephone Call, John, 2996. Cable, Am-Gas.

A. M. CALLENDER & CO., - - - Proprietors.

THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, } Editors.
SANFORD K. CAMPBELL, Associate.

CHARLES H. WADELTON, Manager.

Agents—American News Co., 11 Park Place, New York City.
Lemcke & Buechner, Berlin, Germany.
Aug. Siegle, 30 Lime Street, London, England.

TERMS OF SUBSCRIPTION.

United States, Cuba and Mexico, $3 per year. Canada, $4 per year. All other countries, $5 per year.
Single Copies, 10 Cents.

NOTICE TO ADVERTISERS.

New Advertisements and changes of copy therefor should be in hand Wednesday noon of week prior to date of issue.

NEW YORK, MONDAY, MAY 12, 1913.

[Official Notice.]

Ninth Annual Meeting, Southwestern Electrical and Gas Association.

Office of the Secretary,
Slaughter Building,
Dallas, Tex., April 5, 1913.

To the Members: The Ninth Annual Convention of the Southwestern Electrical and Gas Association will be held at Galveston, Tex., May 21, 22, 23 and 24—a 4-day meeting, instead of 3 days, as heretofore, the Association having so increased in scope and numbers as to necessitate more time for its proceedings. In addition, it has been found necessary to have "parallel sessions" for the gas members and the accountants, these to "parallel" regular sessions which are on subjects not interesting to those attending the gas and accounting sessions. One full session will be given up, as heretofore, to the "Supply Men," who have promised that it shall not be the *least* interesting session of the Convention. This will be followed, in the evening, with a "Rejuvenation" of the Sons of Jove, at which the National Deities will preside.

A large attendance is expected from the East and North, two special cars having already been reserved, from St. Louis to Dallas, where it is expected to "hitch on" enough Texas delegates to make a solid "Convention train" from there to Galveston.

The official and definite programme, with list of papers and topics for discussion will be published in a short time. Full information as to railroad rates and routes, hotel accommodation, exhibits, etc., may be obtained by addressing the Secretary, as above.

Yours truly, H. S. Cooper, Secretary.

[Special Correspondence.]

NINTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

Hotel Burlington, Burlington, Ia.,
May 8th, 1913.

President C. W. Fair called the ninth meeting of the Iowa District Gas Association to order, promptly at 10 A.M., and the banquet room of the up-to-date Hotel Burlington was then an animated, busy place, the attendance at "call to order" evidently being pleasing to the officers, as well as encouraging to the rank-and-file, for Secretary Vincent's usually placid mien was for the time one of smiles. The President introduced the Hon. Mayor of Burlington (Mr. F. C. Morton), who delivered an unusually friendly and timely address, in which he emphasized the spirit of fairness and equal dealing that at all times characterized the local lighting companies, on public and private account. Just before leaving the platform he imparted to President Fair that the Mayor's telephone number was so-and-so, which knowledge might be useful did anything strange occur. The response to the welcome, by that loved of veterans, Mr. George W. Clabaugh, put all hands at ease, and prepared the delegates for President Fair's message, which, although rather brief, was nevertheless very much to the point. The Reports of the Council, and of the Treasurer-Secretary, showed that the Association was prospering in all senses, and that the membership lists had been lengthened by the placing of 34 additional names thereon. The Report of the Nominating Committee recommending the following as office bearers for the ensuing year, was next considered:

For President.—Mr. B. C. Adams, Lincoln.
" *First Vice-President.*—Mr. H. C. Blackwell, Davenport.
" *Second Vice-President.*—Mr. Thomas Crawford, Clinton.
" *Secretary-Treasurer.*—Mr. G. I. Vincent, Des Moines.

Of course, the named candidates were unanimously elected. The first paper considered was that by Mr. Thomas Crawford on "Prepayment Meters," which was in reality a rejoinder to the paper submitted last year by Mr. E. C. Weisgerber. It is well-known out this way that when Mr. Crawford does speak he speaks right to the point, and this presentation was in strict accord with that practice. The discussion that it brought about was useful, prolonged and spirited. In fact, carried the morning session well beyond the time limit. So, after luncheon recess, it was continued to a lively conclusion. The next paper considered was that by Mr. H. G. Stillson, whose clever treatment of "Improving Operating Conditions in Small Gas Works," also brought out a useful debate. The paper by Mr. T. B. Genay on "Reducing Boiler Fuel in a Water Gas Plant," proved an eye-opener and a thought provoker. In fact the general verdict was, after the debate closed, that it ranked at least as high as any technical paper that had been considered in the history of the Association. The Report from "Standing Committee on Construction," which was presented by Chairman J. H. Warnick, concluded the first day's technical proceedings. The evening was marked by a visit to the Garrick Theater, in which artistic temple, after the regular programme had been brought off, a special gas man's finale was worked up. Although some of the "hits" were rather "stingy" the "stung" rather seemed to enjoy the prickings. The pick of the appliance men are on hand, and something is doing every minute. To-day (Thursday) will be the day-of-days, with quite a bit *on dit* for the night. It is possible that I will not be able to get anything in on time for you tomorrow; but the story, of course, will go in "Your next." Rest assured though, that the meeting has been and will be a record one in the history of Iowa, whose population and wealth are growing like the proverbial reed. The only thing that savors of depression is the knowledge that that resourceful, courageous, fraternal man—Kerr Murray Mitchell is no more.—V. I. G.

BRIEFLY TOLD.

Obituary Note.—Mr. Henry Eastland Adams.—The sudden death (in Stockton, Cal., March 12th last) of Henry Eastland Adams, came as a shock to the Pacific Coast Gas fraternity. Mr. Adams had been engaged in the gas business since January 19th, 1893, when, upon the death of his father, Henry Adams, he succeeded the latter as Superintendent of the Stockton Gas Company. Deceased, who was born in Sacramento, Cal., May 19th, 1863, went with his parents on their removal to Stockton, when still a youth. His education was gained in the public schools, and he graduated from the Stockton High School, June 27th, 1882. He immediately selected the gas business as his vocation, and, under the able tuition of his father, rapidly advanced along such lines. Eventually he became the Manager of the Stockton Gas, Light and Heat Company, and to his ability and personal qualifications much of the great success attained by the named corporation is due. He continued as Manager of the Company until ownership of the corporation went into other hands (Feb. 1, 1912), and the following August he entered the service of the Oro (Cal.) Electric Company, in which field he was when death summoned him. Mr. Adams was prominent on the membership rolls of the Native Sons, the Elks, Knights of Pythias, and the Society of Pioneers. He was a charter member (No. 17 on the Roll) of the Pacific Coast Gas Association, and at the time of his death was President of that sterling body. His election thereto was declared during the San Diego meeting, Septem-

ber 18, 1912. Mr. Adams was married to Miss Etta May Chalmers (Stockton, May 11, 1887), who, with their four children, survives him. He was buried from his Stockton home, the afternoon of March 15th, 1913, the ceremonies being shared in by official representatives of the different organizations with which he was connected. A man of probity and of sound business ability, with a personality that commanded respect, engendered regard and nourished affection, the gas men of the Coast have lost an associate whose memory will often be lovingly recalled.

THE GAS MENACE.—When thinking of competition in the lighting field it is not wise to be over confident, neither, on the other hand, must you be alarmed by the talking points that the electric salesman has in his locker. That the latter person thinks seriously of you and your work is indicated by the following editorial from a periodical devoted to electrical merchandise:

"The electrical industry has become so used to 'putting it over on' the gas man, that we take our supremacy entirely too much for granted. We have mentally relegated gas to the kitchen stove, where we acknowledge its virtue, and have gone about the business of selling signs, motors and similar exclusively electrical utilities with complete blitheness of spirit. The idea that the gas mantle might ever become a serious competitor of the modern tungsten filament incandescent is one that had not even occurred to us. Yet is safe to say that gas lighting is making greater strides to-day than ever before. According to an authority who cannot be disregarded, the consumption of inverted gas mantles is now close to 30,000,000 per year. The ruggedness of the inverted mantle accounts for no small amount of this growth, but the aggressiveness of those who have gas for sale accounts for most of it. Ask anyone familiar with both gas and electric service and they will not hesitate to say that the gas men are today applying more advantageous methods in promoting business than are the electric men. Their associations are doing more practical work; as individuals, they are more keenly alive to their opportunities. Nor are the manufacturers of gas appliances far behind. The 'quality idea' has taken hold in the gas industry, and the development work of many manufacturers is in the direction of a higher grade of fixtures, burners, fittings and appliances—equipment which is offered, not with the plea of cheapness, but on the basis of inherent quality. With the natural advantage of lower maintenance, gas lighting becomes an attractive proposition when employed in fixtures which satisfy the æsthetic requirements. So long as gas equipment looked cheap and shoddy, the chief argument of the electric solicitor was a sneer. To-day we see gas equipment which is no whit inferior to the best offered for electric service, and gives double the light at half the cost. This is not a calamity howl. We have no idea that the electric lighting business is about to be wiped out or even seriously crippled. But we do know that competition of a vigorous sort is forming, and that the central station man who fails to note the storm signals is in for an exciting commercial contest."

HIGH PRESSURE GAS LIGHTING IN PARIS.—The yearly displays at the automobile exhibition in Paris, prior to 1912, were lighted exclusively by electricity; but last year the illumination was largely by gas. With the co-operation of the Paris Gas Company, sixty 4,000-candle power, 3-mantle Pharos arcs were installed for the general illumination of the exhibition hall, of 215,000 square feet, and some 16 Pharos and Graetzin arcs were hung in the avenue, Alexander III. A number of the individual exhibits were also lighted by gas, and the contrasts and comments were highly satisfactory to the gas users. These arcs consumed about 77 cubic feet per hour, under a pressure of 64 inches of water. High pressure gas lighting in Paris is beginning to find its place. In November, 1910, there were but 28 such lamps in service, while in November, 1912, there were 686 operated, of from 1,000 to 4,000-candle power.

"NATION WIDE" ADVERTISING.—The National Commercial Gas Association is ready to launch its national campaign for advertising gas. This matter was first presented to the Association at the Denver convention, October, 1911, and the concrete plan is but now ready. A similar national campaign was put in effect in England last year, and the Society for Electrical Development has decided to inaugurate one for electricity as soon as possible. There can be no doubt that properly prepared advertising, in periodicals of wide circulation, can do much to increase the general use of gas, and it is one of the important moves made possible by the advent of the National Commercial Gas Association. The gas companies and manufacturers are to be asked to pay an assessment equal to $\frac{1}{10}$ of 1 per cent. of their annual revenue for 1912, and it is estimated that $150,000 will thus be available for the first year. The funds collected will be held by a Board of Trustees, comprising Messrs. T. N. McCarter, Geo. D. Roper, A. H. Humphrey and Lewis Lillie. The systematic expenditure of so large a sum will render available mediums of a class that it is impossible for the individual advertiser to afford to use, and properly prepared matter will surely bring results beyond what could be expected from the average material now used in much of the company advertising. It is, however, only intended to augment local publicity; but it will educate us how to do this properly and profitably. One-half the year's assessment is due July 1st, next; the balance to be paid January 1st, 1914, and the companies already pledged to the enterprise seem to assure its success. The British undertaking has been very successful, and the results obtained by the Electric Vehicle Association have demonstrated that co-operation in these matters is very effective.

"CHEMISTRY IN GAS WORKS."—Mr. W. J. A. Butterfield recently delivered two excellent lectures covering this topic, before the Institute of Chemistry, of Great Britain and Ireland. The first one dealing with gas production, describes the various methods of manufacture of coal and water gas, giving some comparative figures showing the increase in the demand and expansion of its use for domestic and industrial processes. The second lecture covered the changes from crude to purified gas, giving the various chemical re-actions involved, the methods of testing, and processes of recovering the usual by-products. The lectures deal with gas production as chemical processes, but endeavor to point out that the gas works' chemist must be something more than a machine for carrying out analyses. They exhibit the author as a technically educated gas engineer talking to men active in more theoretical lines of works.

CURRENT MENTION—

A LENGTHY, useful and prosperous career was terminated when, early the morning of April 30th, the death summons came to Dr. David L. Douglas, of Eau Claire, Wis. He was prominent in the gas business for 40-odd years, and is survived by his wife and three sons.

WITH exceeding sorrow his legions of friends learned of the death of Mr. Albert Lane Crawford, which was all the more regrettable from its suddenness, in that it was immediate and without preface. The cause was acute indigestion, and the date was April 30th last Mr. Crawford was in his 50th year, having been born in Newcastle, Pa., June 24th, 1863. Early in life he went to Philadelphia and shortly thereafter to New York, eventually connecting himself with the New York Consolidated Gas Company. In 1898 he became identified with the Welsbach Lighting Company, and shortly thereafter became its Purchasing Agent, and was serving as such at the time of his death. The funeral services were held the 5th inst.

THE proprietors of the Philadelphia and Suburban Gas and Electric Company, Chester, Pa., having decided to install an 8 feet 6 inches double superheater, carbureted water gas apparatus, in connection with the existing equipment, have awarded a contract for the apparatus above mentioned to the Gas Machinery Company, Cleveland, O. This go-ahead Chester corporation has many other extensions to its various departments underway, so as to enable it to meet the increasing demands of its customers, old and new, which demands are brought about by the intelligent and modern business methods of its engineering and commercial managers.

MR. GEORGE E. MARRIN, of North Adams, Mass., has been appointed Superintendent of Distribution for the Cohoes (N. Y.) Gas Light Company.

THE Henrietta (Tex.) Gas Company has been incorporated by Messrs. John Smith, J. B. Swan and C. L. Willey—all local men. It is capitalized in $35,000.

THE bill proposed in the Massachusetts Legislature by the Senator from the Quincy district, under which he proposed to order the gas rate at Hyde Park to be put at 80 cents per 1,000 cubic feet, has been stricken from the calendar.

LAST Friday the New Hampshire Public Service Board considered the petition of the Laconia (N. H.) Gas and Electric Company to extend its mains to and through the town of Sanbornton. There was no opposition.

THE Universal Gas Iron Company, of Rockford, Ills., has been incorporated by Messrs. H. K. Collins and Geo. W. and B. V. La Ruge, all of Rockford. It is capitalized in $50,000.

THE Bench Construction Company, of St. Louis, Mo., will furnish all the sectional silica retorts and silica settings for an installation by the Laclede Gas Company, of 16 benches of throughs, eights, with retorts 16 feet in length.

(*Continued from page* 307.)

I would like to dwell upon is the collective character of modern scientific research. It seems we have that failure to avoid in getting proper support for the school idea. We have to get over in some measure, some of our baser instincts. You all know that the scientific method is the one of publicity. Yesterday we were told that education, in the first place, is a matter of conversion, and later that publicity is a matter of education. It is refreshing to hear such terms as conversion used by gas men. Ordinarily if anyone talks about conversion we think he is talking on some religious subject. You have to realize you can't buy publicity as you would a suit of clothes. There must be a change of heart, which you must bring about in your men who come in contact with the public, and such men are largely the type we have in our fitters' school. We are endeavoring there, not alone to teach them to know more about appliances, but to tell them that, in their contact with the public, they must bring into proper place what we know as courtesy. We have to go beyond merely showing our customers how to use the appliances in the best way. The instruction, as pointed out by Mr. Reinicker, is not applied simply to explanation and demonstration. We do some practical work in the school, and endeavor to impart a little technical knowledge. Skillfulness, though, is something a school can't altogether impart to men. They must acquire that by doing. Of course, an important benefit derived from the school is that our fitters are not required to spend their own time in getting this experience. We have the means, you might say, of forestalling complaints, because complaints generally come from the inexperienced, incompetent man. We are trying to make the experience of one the experience of many, and the minute we discover something unusual in the district we immediately make it part of the school instruction.

Mr. Day—If there are any here who would like to go to the fitters' school I will see that the opportunity is provided.

Mr. Thorson—The National Cash Register Company is a pioneer in this work of educating the employee. While at Dayton I had the opportunity of visiting that plant and seeing how the plans worked. This firm maintains a school in practically every department, placing as great stress on the efficiency of the employee, as on the efficiency of a machine. It is no wonder that this firm is a money maker since it treats its employees as human beings, raising them to high efficiency. Getting hold of an employee even before he starts to work for them, by assembling the boys af the neighborhood and making better lads of them during their school age, it has turned part of the town into a forest. After these boys have finished a forestry course, a diploma is given them, and if they in the future apply for employment, that diploma is recognized as a recommendation, in that they have shown they have the stuff in them to push ahead to learn something. Of course, later on when they get to work for the Company, they are only taught such lines as will be of use to them in the work they are doing. The success of the salesmanship school is known by the fact that any salesman will tell you that all National Cash Register salesmen are good ones. This is carried even as far as the superintendents. Every noon the superintendents and assistants meet and lunch together. At many of these, papers are read on subjects which might be of use to them.

The President—Mr. Rice has a matter that should have come under "New Business."

Mr. Rice—I will take only a moment, but I have a matter very much under consideration. We, meeting here in these gatherings, on going away are apt to stop work for a year and leave it to a very few members. If you were to draw an efficiency curve of this Association it would represent a very high peak for about 2 days in the year, then instantly it falls to nothing. It rises again for a brief period, on receipt of the volume of "Proceedings," then it sinks again to nothing. Now, if you had a similar efficiency curve respecting your business, you wouldn't be satisfied. We are not alone in this matter of inefficiency, for the other Associations experience the same thing. The Institute having experienced it, they have been working on it, and the efficiency curve is rising very fast. One of those things that has contributed is the publication of the monthly "Bulletin," which perhaps has done more than anything else to awaken the interest of the individual members in the work of the Institute. When we send letters to members throughout the year, the percentage of replies thereto is surprisingly small. Indeed it is really amazing how few members take the trouble to answer letters they receive from the Association, on some item of work, or something which calls for comment or assistance. Nothing will be more beneficial to Association work than for each member, on receipt of any communication, to make up his mind to answer that letter within a few days, and then to actually answer it. No matter if he has nothing to say it is far better that he write the Secretary, or the official who communicated with him, and tell him so. It at least shows he has the interest of the Association at heart, that he thought something of the inquiry addressed to him. Having talked with the Secretary, he is willing to undertake, during the coming year, the issuance of a letter every other month, the letter to give a resumè of any work done; meetings of various committees, or the Board of Directors; a brief account of what was done at those meetings; names of members elected during the year; names of men who have agreed to write papers and what their subjects will be; also, a description of all matters of interest to the Association. Such letter can, if the membership shows its interest, take on a question box, which would be of great value. But the publication of this Bulletin every other month will not be successful unless the members actually take an interest in it and show their interest by frequent communication and comment. Carrying this idea out I move we endorse the issuance of a bi-monthly letter by the Secretary; and that we pledge ourselves to assist this work by taking an interest in it and by, in fact, showing our interest in all letters and communications that we may receive.

Mr. Schiller—I would like to second Mr. Rice's motion, but must say I don't think we are giving due regard to efficiency in Association work. I believe our Association is in some way looked upon as a section of the Institute. Now, it seems meetings of local Associations like the Illinois should be very fruitful as a means of stimulating interest in the larger or parent Association. I imagine a good many men who attend these meetings can't attend and don't attend those of the Institute. Why shouldn't we begin to recognize the idea of fundamental efficiency and work out some scheme of closer connection. We are to have letters from the Secretary; that is going to be a local stimulus. Why couldn't we go a little further and work into those letters some of the matter we are getting from the larger Association; the Question Box, perhaps. If we establish one of our own we will duplicate the Institute's. The supposition is the Institute draws to itself the most capable men. Why not avail ourselves of their capability and weave it into our own work so we can be boosters of the work the big Association is doing.

The President—It seems possibly the Association could make some arrangement to have the "Institute News" mailed to all companies not members of the Gas Institute. I think some such arrangement as that could be made, which would help more than anything else to keep all of our companies in touch with what the Institute is doing.

Mr. Rice—The Institute has at present a Committee on Affiliation, which is entrusted with the work of revising Section 55 of the Constitution with the view of working out a closer connection between the affiliated societies and the Institute. How would it be if we appointed a committee of three members to work with that committee and take up this question of the distribution of the "Institute News" to our members. I move we endorse publicatidn of a letter from the Secretary's office every other month, and that a committee of three (the President to be one) be appointed to co-operate with the Institute on the general subject of affiliation. [Seconded, adopted.]

Mr. Reinicker—There was a question asked about the training of salesmen, that was thoroughly answered by Mr. Schiller. He has given a pretty good idea of our work at the fitters' school. The paper was primarily intended for a paper on industrial education and not so much on vocational education.

The President here called on Mr. W. F. Yardley to read his paper on

HOW TO DEVELOP AN IDEAL COMPLAINT MAN.

[For the text of Mr. Yardley's paper, see *ante*, April 21st, p. 255.]

Discussion.

The President—You have heard Mr. Yardley's paper. Does anyone wish to question him?

Mr. Kelsey—Are we not overlooking a very civil way to get at the proposition that has bothered many of us, of how to get a soft-voiced person at the window where the public is met. I thought often of this thing, not only for meeting people at the complaint window, but also as a telephone proposition. The latter phase is becoming more-and-more complicated as the industry grows, and as more people are using the telephones for making complaints. I suppose practical men would be astounded by the suggestion that the people who meet the public be given a course in elocution. Did you ever stop to think how some men can hand out the worst sort of jolt to you and yet salve it by a pleasant tone and the right choice of words? Many of

you heard Mr. Lewis in his characterization of the $8 a week girl who did the gas company a great deal of harm by the way she handled the wife of some well known citizen. You all have had experience, in dealing with public service corporation. Calling up the office and telling your tale of woe for about 5 minutes, someone answering: "Wait a minute." You get someone else on the telephone who asks, "What is it?" If you have patience you will tell your story again. Having done so this party will say, "Wait a minute." After waiting about 5 minutes you tell your story another time. It strikes me that a logical way of meeting this issue was worked out in Detroit. Recently they issued to all employees instructions for the use of the telephones, whereby they economize the time of their employees and avoid in every case this "Wait a minute."

The President then announced that he would appoint as

COMMITTEE SUGGESTED BY MR. RICE,

Messrs. H. L. Rice, F. W. Bedard and President-elect Barrett.

(To be Continued.)

New Methods and Appliances.

FLASHING GAS SIGNS.—The Ramsey Gas Flashomotor is an English apparatus, designed to compete for sign lighting. The ordinary gas pressure provides all the motive power, and its operation is entirely automatic. Fig. 2 shows in section the operating bellows and alternating valve, with the bellows deflated, as shown in full lines, and the rocker valve closing the outlet to the burner, the gas enters the valve chamber through a flexible tube, and thence, through permanently open ports, the bellows proper. This expands as the gas enters until, as shown in dotted lines, the ball run tilts and the valve closes the inlet and opens the gas-way to the burner. The bellows then empties by its own weight, until it drops below the horizontal, and the valve changes again. By the addition of other valves and ports it can be made to spell-out signs, and the movement of the bellows can be used to operate a revolving sign such as shown in Fig. 2.

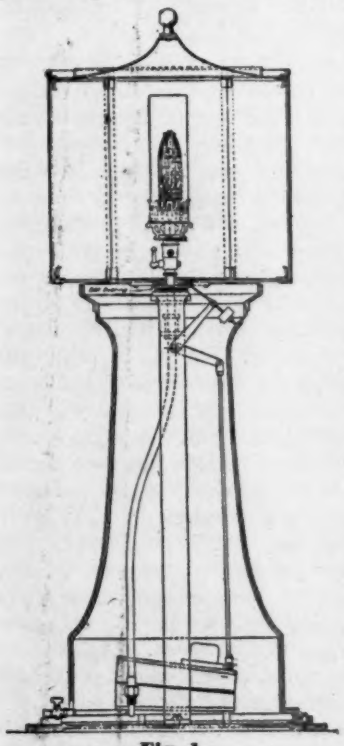


Fig. 1.

In this design the lantern is revolved while dark and presents a new illuminated face on each flashing. As normally operated the alternations occur every 5 seconds,

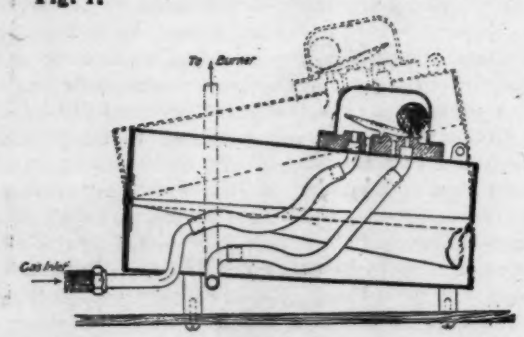


Fig. 2.

and the simplicity of the device is shown by the fact that some machines have operated continuously for more than a year.

PHOTOGRAPHY IN THE DRAFTING ROOM.—One large expense in the modern drafting room is that of tracing and checking finished drawings before blue print copies can be made for shop use.

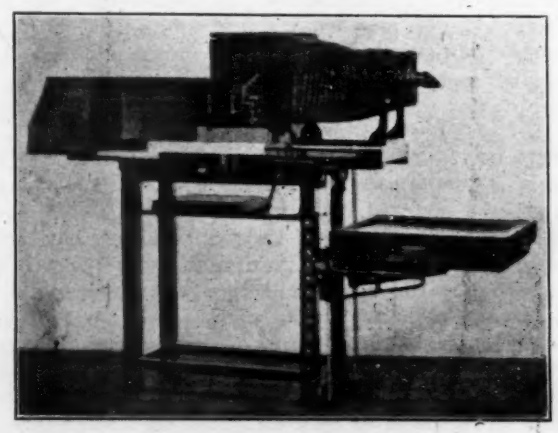
A new apparatus, the "Photostat," now being introduced, cuts out tracings by the production of photographic copies direct from pencil drawings.

This device is practically a large camera equipped with developing and fixing baths, and graduated scales for focussing without the use of a ground glass screen, and without requiring a dark room. The subject to be copied is photographed directly on sensitized paper, which is in a continuous roll, and means are provided for cutting off each sheet after exposure and passing it into the developing bath without being touched by the hand. The image is a direct one, not reversed as in the case or a negative. By this process a print can be produced, including the developing, fixing, washing and drying, in 2½ minutes, and where the work is done in quantities the time is much less.

When the drawings to be reproduced are large in size, the prints are on a reduced scale, as the largest print which the apparatus makes is 14 by 11½ inches; and in such cases it is advisable to make figures and printing larger than usual to permit of reduction. The smaller the original drawing the less is the reduction, and for details it is practicable to make the drawing to Photostat dimensions and reproduce full size.

The original drawings are made with an HH pencil, and after the prints have been made the pencil drawings are filed away and the prints used for office reference.

The accompanying figure shows the machine with a table for



The Photostat Copying Apparatus.

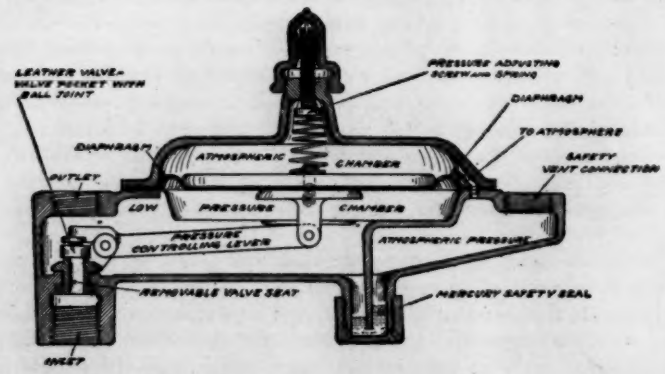
drawings up to 26 by 29½ inches; the table having a spring bottom for books, which are held up by the springs, so as to bring the page to be copied against a sheet of glass. The apparatus consists of a camera with the usual extension bellows, lens, stops and shutter, with the addition of a prism to reverse the image, so that printed matter will read from left to right, as in the original. There is also a color screen which can be swung into position for photographing subjects which are in colors. The rear part of the camera is a light-tight magazine for holding a roll of sensitized paper. The paper is supplied ready wound on a spool in a box, and the whole box is placed in the magazine. The paper passes out of the box over a roller and is stretched across the focal plane by two gripping and feeding rollers.

The lower part of the camera contains a developing tray, a water bath and a fixing bath. The lens and prism are set centrally with the table, and the rear part of the camera can be moved in and out for focussing.

Illumination is by a pair of mercury vapor electric lamps, mounted on swiveling stands for adjustment. To reproduce a drawing it is placed on the table and centered. The table is then elevated or lowered to the required position, as indicated by the scale, and the camera focussed.

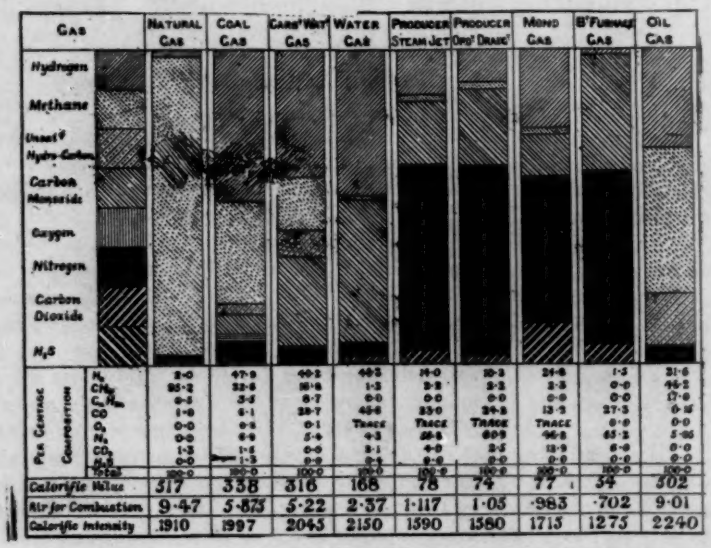
The exposure is then made, the time for black and white work varying from 8 to 25 seconds, according to the subject and the size of the stop used. The lens is then covered and the paper wound down into the developing bath, bringing a new sensitized surface into position for exposure. At the end of 30 seconds the developed print is taken from the tray, run through a water bath and into the fixing bath, where it is left for a minute or two, and then washed and dried.

HIGH PRESSURE REGULATOR.—To meet the demand for a reliable house governor at a moderate price, the Equitable Meter Company, Pittsburgh, Pa., has just added to its line 2 new styles; one for inlet pressures up to 2 pounds, and the other (shown in the cut) for inlet pressures up to 80 pounds per square inch, either of which will deliver uniform pressures of from 2 inches to 8 inches at the outlet. Some of the good points of these EMCO regulators are: Connections



—straight line, vertical ¾ inch by ¾ inch, and ¾ inch vent Capacity —400 cubic feet per hour at 3 inches. Valve seat, removable. Change of size of orifice easy and inexpensive. Adjustment—by spring; or, if preferred, by movable weights. Safety seal—mercury seal of new type and large discharge area. Efficiency area—diaphragm to valve, as 2,470 to 1. Valve—position shut off, leather disk, ball-joint type. Diaphragm—Can be removed without taking governor from line; top chamber vented to blow-off. These governors have all the improvements that latest practice has shown desirable.

GASEOUS HEATING.—In a lecture on this topic, delivered before the Yorkshire (England) Junior Gas Association, some valuable data and tables are included. The advantages of gaseous heating are noted as: First. The increased thermal efficiency obtained, due in part to the perfect combustion possible with a very small excess of air. In furnaces using solid fuel 10 per cent. of oxygen in the stack gases is not uncommon, which means about 70 per cent. excess air, all of which enters cold and carries off heat energy. Second. Possibility of exact regulation of temperatures. Third. Ease of handling and distributing fuel. Fourth. Cleanliness. Fifth. Reduced wear and strain on furnaces, by reason of uniform temperatures, absence of drafts and freedom from fusible ash, etc. Sixth. Material treated free from contact with sulphur phosphorus and other contaminating substances. Seventh. Saving of time in raising furnaces to desired temperatures. After discussing the chemical equations of combustion and the properties of the pure gases composing the usual commercial fuel gases, tables are given for calculating calorific values, but actual calorimeter tests are recommended as preferable. The appended is a useful graphic comparison of composition and heating values of fuel gases.



The calorific intensity, in the last line, is obtained by dividing the net calorific value by the capacity for heat (weight × mean specific heat over temperature range expected) of the products of combustion. It gives the temperature range through which it is theoretically possible to raise the product, and is valuable in determining the fuel suitable for obtaining given temperatures. Producer gases are discussed from the practical and theoretical sides, and the construction and operation of furnaces for their utilization. Considering the burning of coal gas in a bunsen burner five stages are recognized: First. No air; flame is yellow and smoking; second, as air is admitted flame decreases in size, loses its luminosity and shows blue or violet; the air is sufficient to oxidize the carbon of the hydrocarbons to CO; third, as more air is admitted the flame gets still smaller, and a distinct blue inner cone appears, the rest of the flame being purple; fourth, further increasing the air makes flame smaller still, the inner cone becomes green and the outer cone reddish, and burns with a noise. The change in the color of the inner cone to green indicates that some carbon is being oxidized to CO, and some methane attacked; fifth, more air flattens down the inner cone and makes it blue again, while outer cone is smaller and red. All of the carbon is being practically oxidized and some of the hydrogen, while the outer cone consumes a mixture of CO_2, H_2O, H_2, CO, and N_2; sixth, by increasing air sufficiently the outer cone can be made to disappear entirely and the flame (which will not keep alight in the open air) is bright blue. The whole of the gas is now being burned in one stage, corresponding to theoretically perfect combustion.

The condition designated as four is seldom passed in the ordinary bunsen burner, as it will flash back, for the reason that the rate of flame propagation (the speed with which it burns) becomes greater than the velocity of the mixture moving through the burner tube. This explains the higher efficiencies and temperatures possible with blast burners using either the air or gas under increased pressure.

ILLUMINATION FOR OUTDOOR SPORTS DURING SUMMER NIGHTS.—The installation of gas lighting on the tennis courts of the Woodbury (N. J.) Tennis Club, proved so popular that it was thought it would be a good scheme to extend this field of artificial illumination to include the lighting of a golf putting course. Such courses have been in vogue for sometime, their usefulness, of course, being limited to the daylight hours. The course is laid out on a plot of ground 40 by 80 feet and contains 9 holes. The grass is trimmed closely, as on a putting green, and while such courses were originally intended only for practicing putting they are now being used extensively for putting matches. It must be evident that such a course would be highly desirable. In the first place, only a limited area has to be lighted; in the second place, it makes it possible for business men, and others who have not sufficient time at their disposal during the day to practice putting, or to play a putting match at night. A night tournament has already been played. Twelve persons can occupy the course at one time, and it has proved an extremely novel and popular recreation. In the game of golf much depends upon the ability of the player to putt properly. He may get a wonderfully long drive, but when he has finally landed his ball on the putting green he may lose the advantage gained by his drive in not being a proficient putter, and it is to develop this particular part of the game that the courses referred to were originally designed. The installation is comparatively simple. Two wrought iron posts, of 2½-inch iron pipe, are used, and the lamps are suspended from the ends of a long cross arm at the top of the posts. Four, 5-mantle, Welsbach, multi flex inverted gas arcs are used to light the course, with opaline globes to reduce the glare. A fairly uniform distribution of light over the course is desirable, the principal requisite being to have the 9 holes uniformly lighted. This was accomplished by spacing the holes so they were not more that 10 feet horizontally distant from the lamps. The lamps are equipped with standard distributing reflectors, for it was found that the players not only desired to play on the course itself, but to approach the course with a "mashie," and it is possible to do this from a distance of at least 100 feet. The intensity at the holes is approximately 2½-foot candles. The holes are painted white, causing them to be easily visible from any part of the course. To get a good idea of the illumination provided, it is considerably higher than that on the floor of an ordinary dwelling as usually lighted.

The remarkably uniform illumination is shown by the accompanying photograph which was made by the light of the lamps alone with 1½ minutes' exposure.

It will be noted that the golf balls are clearly distinguishable in the picture; and, fortunately, from the illumination standpoint, there is a good contrast between the white golf ball and the grass. In fact, it is possible to distinguish the ball on the green at a distance of 200 feet. The lamps on the gas-lighted tennis courts are seen in the background, and it is certain that night tennis proved quite an attraction last year. The courts were crowded every clear evening; in fact, the "waiting list" always held the names of players anxious

for a turn. The cost of lighting this golf putting course is 7¼ cents per hour for the gas consumed, each lamp using from 18 to 20 cubic feet per hour. The cost of gas in Woobury is 90 cents per thousand. The lamps are standard, 5-mantle, Multi-Flex gas arcs, and the installation represents a new achievement in gas illumination by the well-known Welsbach system.

MACHINERY EXHIBITS AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION.—Mr. O. H. Fernbach informs us that rapid progress is being made in the construction of the main exhibit buildings for the Panama-Pacific International Exposition in San Francisco. The first of the buildings is completed and five other structures are under way. There are to be 14 main exhibit buildings, and contracts will be let upon the remainder, to bring all to completion by July, 1914. Work upon the machinery building, the largest of the exhibit group, was begun early in 1913, and the framing of the main portion of the structure is virtually completed. This foretokens the complete installation of exhibits by the opening date, February 20, 1915. The exposition management plans a record, not only in construction, but in the presentation of a finished spectacle on the opening day. The Department of Machinery Exhibits is thoroughly organized and filings for exhibit space have been received to an extent that assures a display commensurate with the importance of the industry. Early applications are especially welcomed by the Panama-Pacific management which will facilitate the proper grouping of the exhibits and the perfection of other arrangements essential to the interests of exhibitors as well as to the exposition. For the information of exhibitors the following brief data have been forwarded by the Exposition Company:

The Machinery Building will have nearly 8 acres of floor space.

In addition, there will be an auxiliary structure to be known as the "Gas and Fuels Building." Electrical machinery, instead of being placed in a separate building, will be located in the Machinery Building and classed under the general heading of Machinery.

All parts of the building will be served by adequate crane facilities. Electric current, alternating and direct, gas and water will be available in any portion of the building, and compressed air and steam will be provided in a section adjacent to the Gas and Fuels Building. General illumination is to be provided by the Exposition Company, but a nominal charge will be made to exhibitors for other utilities service they desire. Special rates for power will be made to exhibitors who use it to show machinery in motion. The floor of the Machinery Building is designed for a load of 200 pounds per square foot. The soil conditions will permit adequate foundations for heavy machinery to be readily constructed. No charge will be made for exhibit space.

The management urges that concerns and individuals desiring to participate lose no time in getting into touch with the Exposition Company and filing applications for space. Copies of the rules and regulations, documents as to the classification of exhibits, blank applications for space and other information prepared for the guidance of exhibitors will be promptly forwarded on request to the Panama-Pacific International Exposition Company, San Francisco, Cal.

IDEAL ILLUMINATION.—The Unique Art Glass and Metal Company has in its "Equalite" fixtures a line representing the latest achievements in semi-indirect lighting. This system of lighting is designed to eliminate the eye fatigue from exposed light sources and to utilize for illumination a larger proportion of the available light than is possible with the unmodified, indirect installation. The "Equalite" accomplishes this by using in the reflecting bowls a type of alabaster glass with grain-marking closely resembling real alabaster, which has been produced by co-operation between glassmaker and chemist. They have produced a good reflecting glass that at the same time deflects and diffuses downwardly a direct, soft white light. The combination of the direct diffusive rays with those reflected from the ceiling gives a result highly satisfactory as to total illumination and at the same time ideal as to absence of glare. The light standards used for the illumination of Taft Hall at the recent convention in Atlanta, Ga., were an example of "Equalite" production, and a most pleasing installation is the lighting of the new Eltinge Theater in New York. At its office in the Architects' Building, corner Park avenue and 40th street, New York, the Company is showing a line of Equalite fixtures covering more than 100 examples suitable for home and store lighting.

THE MILFORD (MASS.) GAS AND ELECTRIC COMPANY'S SHOW.—A correspondent in Milford, Mass., writing under date of April 29th, says: From March 31st to April 5th, inclusive, the Milford Gas Light and the Milford Electric Light and Power Companies gave a gas and electric show in the Y. M. C. A. Hall for the purpose of demonstrating and showing the different gas and electric appliances to the people of Milford. There was a good general attendance and the visitors seemed very much interested. During the show quite a number of gas ranges, water heaters, electric and gas irons and electric-driven vacuum cleaners were sold. The show was conducted under the direction of the local manager, Mr. W. H. Leonard, assisted by Mr. W. S. Watson, the competent and clever new business manager of the Gas and Electric Improvement Company of Boston. Lectures and cooking demonstrations were given each afternoon by Miss Webber, assisted by Miss Emma Broduer, and a complete dinner was gotten up every afternoon by Miss Webber, the cooking being done on a Clark Jewel cabinet range. In the evening coffee, which was made in an electric percolator, was served to patrons of the show by young ladies, while the different gas and electric appliances were being demonstrated by a large force of ladies and gentlemen from the different companies having exhibits in the show.

The arrangement of exhibits in the hall was as follows: As one entered, on turning to the left, one first came to a table on which several gas meters in glass cases were being shown, each meter working, each company having a different type of light, so that the patrons could get an idea of the varying consumption as affecting the volume of light. Passing along, one found a gas meter prover in the corner, which prover was connected up so the patrons could be shown how gas meters are tested. Next was a table carrying Welsbach mantles, lamps and shades. The balance of the left hand side was taken up with different styles of Clark Jewel gas ranges, all of which were connected up to the gas supply for the purpose of demonstrating. At the lower end of the hall was the stage where the lectures were spoken in the afternoon, and where a young lady presided at the piano during the evening. The lower right hand corner was fitted as a modern bathroom, where Pittsburgh automatic gas water heaters and tank heaters were demonstrated. There was also a stack tank heater, which was also connected up for demonstration. Next was a table with a Paul water pump, direct connected to a ¼-horse power motor in operation upon it. The rest of the right side was taken up by a long table upon which were different electrical appliances such as toasters, percolators, heating pads, flat irons, fans, table lamps, etc. All of these appliances could be connected up for demonstration purposes. On the wall at the upper right hand corner was an electric meter hooked up in such manner that patrons could be shown the difference in consumption between the different tungsten lamps. Right beside the door, at the right hand side, was a simplex electric range, connected up ready for use, and in the center of the hall was an electric vacuum cleaner, which was constantly being demonstrated. The hall was very prettily decorated, and the walk leading up to it was beautifully lighted by means of six gas arc lamps. Over the door was an electric sign in the form of the Company's emblem. The streets leading to the hall were lighted by 100-candle power tungsten lamps placed on every pole on each side of the street.

THE Iowa Gas and Electric Company, of Washington, Ia., will extend its main system this season, by the addition thereto of 4 miles of pipe.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,059,873. Automatic Cut-Off for Gas Burners. R. Hughes, Mount Vernon, N. Y.

1,059,978. Means for Attaching and Removing Gas Mantles. J. Cartwright, Cleveland, O.

1,060,093. Inverted Gas Burner. F. J. Humphrey, Kalamazoo, Mich.

1,060,136. Thermostatic Gas Burner. H. Schneider, Cleveland, O.

1,060,139. Recording Attachment for Meters. H. A. Selah, Philadelphia, Pa., assignor of one-half to J. McLinden and one-fourth to C. F. Sanders, North Wildwood, N. J., and one-eighth to W. McFadden, Philadelphia, Pa.

1,060,171. Apparatus for Producing Gas. H. L. Doherty, New York City.

1,060,410. Method of Producing Gas. J. N. Alsop, Owensboro, Ky., assignor to Alsop Electrical Co., same place.

1,060,478. Incandescent Gas Mantle. A. F. Millan, Mannington, W. Va., assignor of one fourth to T. V. Morgan, same place.

Items of Interest
FROM VARIOUS LOCALITIES.

THE proprietors of the Cooperstown (N. Y.) Gas Company have withdrawn their petition to discontinue the production of gas for a term of 5 years, but to still hold its charter meanwhile. Instead, they now ask leave to surrender the charter and discontinue altogether the business of manufacturing and distributing gas. The Village Trustees have assented to the petition, provided formal application on such account be made within 10 days, and that users of gas be given 60 days' notification of intention to discontinue service. On the other hand, the users of gas, to the number of 114, have made a protest to the Public Service Commission, Second New York District, against allowing the Company to discontinue its activities under any pretext whatsoever.

THE proprietors of the gas plant for Hampton Beach, Mass., have secured a franchise for the operation there of such an undertaking, and they say construction work in respect of the proposed supply will go on forthwith.

THE gas producing power plant of the Brainerd (Minn.) Heat, Light and Power Company was recently sold at sheriff's sale. The purchaser was Guy P. Johnson, of Minneapolis, Minn., at his bid of $33,326.26. The sale included real estate, etc.

THE last week in April Judge Seehorn, in Circuit Court, Kansas City, Mo., informed the attorneys for the local Gas Company that the Court had the right to prevent it from shutting off the supply to a consumer if he refused to pay the full rate of 27½ cents per 1,000 cubic feet in the instance that the gas pressure was weak or uncertain. He also intimated that next winter the Company would not be allowed to arbitrarily charge the full rate of 27½ cents, working under pressure so inadequate that the internal temperatures of dwellings were below a safe, livable point. He also further let it be inferred that consumers could not be compelled to pay for more gas than was delivered them, and that the Company might not insist on payment by threatening to cut off the supply. In such contingency the Court would move to protect the consumer by seeing to it that he paid only a just sum; further, that the Company would be compelled to keep up the supply during the period that the dispute was in process of adjudication. All of which would seem that the law in the State of "Show Me" is altogether in favor of the consumer, with short legal shrift for the producer.

ON the 1st inst. the Public Service Gas Company, of New Jersey, gave notice that thereafter the gas rate in all the settlements that it serves would be 90 cents per 1,000 cubic feet. This notification directly concerns close to 450,000 families. Meanwhile this action will not in any sense interfere with the progress of the action brought by the Corporation in the Supreme Court, to determine whether or not the 90-cent figure was a fair one for application in the Passaic district of the State.

MR. PHILIP GREGG, District Superintendent, the Central Hudson (N. Y.) Gas and Electric Company, severed such connection the 1st inst. Shortly after he had made known such intention his associates presented him with a gold watch chain, charm and fob.

THE officers of the proposed Hampton Beach (Mass.) Gas Company are: President, G. A. Smith, Haverhill, Mass.; Vice-President, John H. Johnson, Hampton; Treasurer, Geo. H. Swazey, Boston; Manager, John H. Jennings, Amesbury, Mass.

THE authorities of Clinton, N. Y., have determined to there construct a gas plant, to be run on municipal account. This place is a beautifully located, handsome growing spot in Oneida county, N. Y. It is on Oriskany creek, and on the New York, Ontario and Western Railway, at a point 10 miles southwest of Utica. It harbors several noteworthy educational institutions, the most prominent of which is Hamilton College, the centenary of which was celebrated last year—the celebrated Litchfield Observatory is connected therewith. If for no other reason, a gas plant would be a paying enterprise in Clinton, in that several large canneries are operated there the year round. Population about 4,800.

THE foundation and tank for the new holder for the Bridgeton (N. J.) Gas Light Company was completed this week, which lets out from the job Mr. Wm. W. Meesick, and lets in Mr. Geo. R. Bradley, who will supervise the engineering details for the contractors, the Bartlett-Hayward Company, of Baltimore. The completion of the foundation was marked by "some dedication ceremonies," that were well worth while. The main dedicatory act was the placing in the concrete, at a suitable point, of an iron pipe containing a copy of each of the Bridgeton daily newspapers, several nickels (of the newly minted type), a list of the officers of the Company, and the names of all the workmen concerned in the job. Of course, the pipe was plugged at both ends before being "sot" in the concrete. Engineer Bradley said the plugging at both ends did not mean that the "nickels" would be in any danger at the hands of his men; rather that the Bridgeton masons wished that the nickels should never suffer discoloration during the lengthy spell of immurement that was before them. Then the men of both corps did some high "jinks, not the least remarkable of which was the touching of "The Boss" by "Pete" Fountain for another cigarette. For the "main facts" in this connection we are indebted to "D. V. W."

MR. WILBUR K. SLOAN, of Swedesboro, N. J., has applied to the City Council, of Cedartown, Ga., for the right to there construct and operate a gas plant, to supply gas for cooking and heating uses only. The "only" proviso is made to assure the authorities that it is not the intention of himself and associates to compete in any way with the Cedartown municipal electric lighting plant. This place is the capital of Polk county, Ga., and is located on the old Chattanooga, Rome and Southern Railway, at a point 62 miles west-northwest of Atlanta. It supports cotton oil mills, cotton ginneries, knitting mills and large iron works. Its population is not less than 5,600, and it is growing like the proverbial reed.

THE Paxton Gas Company, to build and operate a gas works in Paxton, Ills., has been incorporated by Messrs. F. M. Thompson, T. J. Larson and W. H. Hunter. It is capitalized in $40,000. This place is the capital of Ford county, Ills., and is on the Illinois Central and Lake Erie and Western Railroads, some 50 miles east of Bloomington. It is the center of a very fertile district, and its large business enterprises include: Brick and tile works, canning factory and woodworking shops, and from here are shipped large numbers of live stock and much farm produce. This is how it has grown: Population in 1890, 2,187; in 1900, 3,036; in 1913, 5,790.

THE gross selling rate by the York (Neb.) Gas Company, beginning the 1st inst., is $1.60 per 1,000; net, $1.50.

"V. M. S.," writing from Fremont, Neb., under date of the 30th ult., says: "The beautiful new offices and handsome headquarters of the Fremont Gas and Electric Light Company were thrown open to

the public this week, and quite 2,000 visitors inspected the buildings and their equipment. The latter is most complete, and perhaps the item that attracted most attention was the pulmotor device, the operation of which was demonstrated several times. The Company proposes to instal this life-saving instrument in a local institution. Over 1,000 cook books were distributed as souvenirs—and, let me tell you, this seems a right good thing to do—and the ladies also received carnations. The lucky female to 'draw' the gas range pasteboard was Mrs. Luke Mundy, the presenting of, or announcing of which, was made in manner by Mr. Henry E. Danner (the Company's Commercial Manager), that caused one admiring member of the gentler sex to exclaim: 'I wonder if the celebrated Englishman's (Lord Chesterfield) manner was superior to his'—meaning Mr. Danner, of course. The carnations were dealt out by Mrs. Graham, Miss Wehner and Mr. Jesse Schuff (of the Lincoln Company), and it is a bounden fact that the latter had the time of his life. The location of the office suits admirably the purpose of the Company and the comfort and convenience of its patrons."

THE Lynn (Mass.) Gas and Electric Company has lost a valued stenographer, but Mr. George W. Freeman, also a trusted employee of the same corporation, has gained a charming helpmeet. And it all came about through their marriage the evening of the 24th ult. The ceremony was held in the parsonage of the Second Universalist Church, the pastor, the Rev. John Vannevar, officiating. After the ceremony a largely attended reception was brought off in the home of the bride's parents, Mr. and Mrs. Frank L. Damon, on Autumn street.

"SUPPLEMENTING your brief notice of the election of Mr. James C. De Long, since 1907 Vice-President and General Manager of the Syracuse (N. Y.) Lighting Company, to the Presidency of that corporation, I venture to send the following: 'With the election of Mr. De Long a local man becomes President of the Company, since control in it became vested in the U. G. I. Company. Mr. Walton Clark was elected a Vice-President, and the other officers are: Vice-President, Lewis Lillie; Treas. and Asst. Secy., E. W. Poole; Secretary, W. F. Douthirt; Asst. Treasurers, James Ball and F. W. Morris; Comptroller, G. W. Curran; Purchasing Agent, J. A. Pearson. Mr. De Long first became acquainted with the lighting industry in his native city, Utica, N. Y., and subsequently held responsible positions with the public service corporations in several cities. He came to Syracuse from Philadelphia, in which city he was connected with the home offices of the U. G. I. He is First Vice President of the Empire State Gas and Electric Association, and is also a member of the following organizations: National Electric Light, National Commercial Gas, National Organization Electrical Engineers, and the American Gas Institute. In Syracuse he has been actively identified with civic affairs, being particularly interested in the work of the Chamber of Commerce."

MR. GEORGE H. SWAZEY, 332 Old South Building, Boston, Mass., writing from there under date of the 1st inst. (he is Treasurer of the projected Gas Company for Hampton, Mass.), informs us that the Company is in the market for a small coal or water gas plant, new or otherwise.

THE H. Koppers Company, 5 South Wabash avenue, Chicago, Ills., informs us that work will begin at once under its contract to construct 2 batteries, of 60 ovens each, for the Maryland Steel Company, at the latter's huge station, Sparrow's Point, Md. It is further noted that work will be commenced this month on an up-to-date plant for the Laclede Gas Light Company, St. Louis, Mo.

WE understand that the Brooklyn Union Gas Company, Borough of Kings, N. Y., has established a corps of physicians and assistants having at instant command several pulmotors, together with 4 high-powered automobiles and horses and wagons, to speedily come to the aid of victims of gas asphyxiation. Regular stations have been established, and the territory covered is bounded on the south by Coney Island, on the north by Long Island City, on the east by St. Albans, and on the west by the East river.

MESSRS. KELSEY, BREWER & Co. have agreed, in case a sufficient number of signers can be obtained, to pipe the summer resorts of Mactawa Park, Ottawa Beach and Black Lake, Mich., the gas supply to be furnished from their plant in Holland. This looks a clever scheme; however, most things done by this corporation are cleverly done.

WORK has been commenced on the gas plant for Port Arthur, Tex., the constructing contractor (Mr. J. S. Connelly, of Carthage, Mo.) and his men having reached the ground the last week in April. This enterprise has become a fact largely through the well-directed efforts of Mr. G. H. Eubank, of the Port Arthur Board of Trade.

AT the annual meeting of the shareholders in the Chester (Pa.) Gas Company the officers elected were: Directors, J. Howard Roop, Clarence Deshong, O. H. Cloud, J. P. Crozer and E. B. Johnson; President and Treasurer, J. H. Roop; Secretary, E. B. Johnson.

THE office staff and working force of the Keene (N. H.) Gas and Electric Company, the evening of the 30th ult., requested the presence of Mr. Edgar T. Barclow (who had resigned the position of bookkeeper to the Company) in the office that they might bid him a "collective goodbye." When the party adjourned the Barclow scarf was adorned with a handsome stickpin, the giving of which formed a salient section of the set farewell.

MR. M. D. SPENCER has resigned the position of Manager of the Everett (Wash.) Gas Company, in order to engage in a mercantile business in Portland, Ore. As heretofore noted, his successor in Everett is Mr. H. H. Stephens, formerly Manager of the El Reno (Okla.) Gas and Electric Company.

THE California Railroad Commission has ratified the sale of the plants of the Livermore Water and Power Company to the Pacific Gas and Electric Company. It is said that the purchase consideration amounted to $242,000.

"B. V. S.," writing from Providence, R. I., under date of the 4th inst., says: "I failed to read any notice in the JOURNAL of the death of Mr. S. A. Jenks, who passed away, at his home in Barrington, the morning of the 18th ult. He was prominent on the Boards of Directors of the Blackstone Valley Gas and Electric Company and the Pawtucket (R. I.) Gas Company. As a mark of respect to his memory the offices of both the named corporations were closed during the hour that the memorial services were being conducted. No other business man (and his career here covered a period close to 50 years in this section) was more thought of in its religious, business and social circles."

AT the April meeting of the New England Section, National Commercial Gas Association, the paper for the evening was by Mr. Wm. Edmondson, Consulting Engineer, Boston Consolidated Gas Company, whose subject was: "The Gas Engine and Some of Its Applications." It was freely and intelligently illustrated by means of well-shown lantern slides. The lecturer's complete mastery of his subject was practically shown through his notations respecting several of the large gas engine installations in this country. A visit to the Everett works of the New England Gas and Coke Company has been arranged for May.

MR. EDWIN C. BRADLEY, President of the Empire Gas and Fuel Company, and largely interested in the Hornell Gas Light Company and the Canisteo Gas Company, all of New York State, died at his home in Wellsville, N. Y., the morning of April 22d. Deceased was in his 80th year, having been born in Cussewago township, Crawford county, Pa., December 21, 1833. He was a pioneer in the petroleum industry, and had been actively engaged in business up to a twelve-month ago.

THE Peoria (Ills.) Gas and Electric Company has been incorporated, with a capital of $750,000, to operate these gas and electric plants in the State of Illinois: Pekin, Roanoke, Eureka, Cuba, Havana City, Metamora and Washington. The incorporators are Messrs. A. D. Furlong, Springfield, Ills., and H. P. Willett and P. B. Warren, of Peoria.

THE New York *Herald* declares that David Roswell Wylie, son of Dr. David G. Wylie, for 23 years pastor of the Scotch Presbyterian Church, Central Park West and 96th street, New York, and a member of the field engineering staff of the Consolidated Gas Company, of New York, is the youngest deacon in the Presbyterian Church. He is in his 25th year.

The Market FOR GAS SECURITIES.

The course of the market for city gas shares during the week seemingly indicates that the end of the unreasoning course of speculation has been reached, and that a period of calm valuing is about to supersede the lengthy run that has been witnessed in respect of financial hysterisis. The great majority of our readers know that the gas business, in our small centers as well as in the largest ones, never was more prosperous. This is shown in the annual returns presented of recent date to shareholders, the figures disclosing in every instance fair average output gains. The only speck in the composite showing is the upward turn in the market for enriching oils; but the speck really affords a clearer illustration of the exceeding strength of the industry, in that changes to be made in manufacturing methods, which changes involve expenditures that will run into millions, are arranged for without hesitancy.

Consolidated came in to-day (Friday) at prices to all intent those of a week ago, and quite some sales were recorded. There is every fair reason to support the prediction that gas shares of all sorts will show important gains on the high side in the coming summer period. The annual meeting of the New York Mutual Company will be held the 13th inst., at 3 P.M.

Brooklyn Union is neglected, and the quotation for it is really a nominal one. Lacledes are up a point or so, and gas bonds are in increasing demand at practically better prices.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

MAY 12.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$99,816,500	100	129¼	130
Central Union Gas Co.—				
1st 5's, due 1927, J. & J.	3.500,000	1,000	101	103
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	105	106
Mutual Gas Co.	3,500,000	100	157	157
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	101	102½
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	59	63
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	98½	100½
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	96	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	100	102
Standard	5,000,000	100	102	104
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	125	128
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	399,650	500	130	—
Out-of-Town Companies.				
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	97	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	83	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed				
Gold Bonds	7,860,000	1,000	104	106¼
Cincinnati Gas and Electric				
Co.	29,500,000	100	87	90
Columbus (O.) Gas Co., 1st				
Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. &				
Heating Co.	1,882,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,460,084		118¾	119
Mortgages, 5's	3,400,000	—		—
General Mortgage 4½	10,661,0 0	—		—
Con. Gas Co., Baltimore				
City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	94	96
Bonds	75,000	—	—	100
Detroit City Gas Co.	6,580,000	—	—	50
Detroit Gas Co., 5's	381,000	1,000	75	80
" Prior Lien 5's	5,619,000	1,000	97	100½
Equitable Gas & Fuel Co.,				
Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	133	136
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co.,				
1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of				
New Jersey	10,500,000	—	187	188
" Bonds, 5's	10,500,000	—	104	106
Indianapolis	2,000,000	—	7	8
" Bonds, 5's	2,650,000	—	90	93
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	200,000	1,000	97	100
Kansas City Gas Light Co.,				
of Missouri	5,000,000	100	—	86
Bonds, 1st 5's	3,822,000	1,000	98½	99
Laclede Gas Co., St. Louis.	10,000,000	100	94	94
Preferred	2,500,000	100	99	102
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	120	130
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	
Massachusetts Gas Companies, of Boston	25,000,000	100	88¼	88¾
Preferred	25,000,000	100	90¼	90½
Montreal L. H. & P., Canada	2,000,000	100	23½	27
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	6,000,000	—	127	128
New Haven Gas Co.	5,000,000	25	182	190

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, Richmond, Va., October 15-17, 1913. Officers: President, W. R. Addicks, New York City. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting Sept. 1913. Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct. 8, 1913. Officers: President, C. G. M. Thomas, Long Island City, N. Y.; Secretary, C. H. B. Chapin, 39 W. 39th street. New York City.

Gas Meters.—Monthly Section Meetings; Grand Commissioner, I. W. Peffly, New York; Gen'l Sec'y, H Thurston Owens, La Crosse, Wis.; New York Section, Chairman, Will W. Barnes; Secretary, John M Brock, 204 Percy street, Flushing, N. Y. Philadelphia Section; Chairman, L. R. Dutton; Secretary, H. F. Patterson, Jr., 831 Chestnut street. Cleveland Section, Chairman, F. R. Hutchinson; Secretary, Wm. Holtz, East Ohio Gas Co. New England Section, Chairman, F. M. Roberts, Haverhill; Sec., F. K. Wells, 69 Broad street, Boston. Winona Section, Winona, Minn., W. F. Clausen, Chairman.

Guild of Gas Managers of New England.—Annual meeting, March, 1913. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, March 18th and 19th, 1914. Chicago, Ills. Officers: President, W. F. Barrett, Chicago, Ills.; Secretary-Treasurer, Horace H. Clark, 115 No. Oak Park avenue, Oak Park, Ills.

Illuminating Engineering Society.—Annual meeting,——— September, 1913. Meetings of Sections, monthly. Pres., Preston S. Millar; General Secretary, J. D. Israel, 29 W. 39th street, New York City. Sections: New York, Secretary, C. L. Law, 124 West 42d street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, J B. Jackson, 28 North Market street. Pittsburgh, Secretary, J. C Mundo, Oliver Building.

Indiana Gas Association.—Annual meeting, March —— —— 1914. Terre Haute. Officers: President, A. S. Cooke, Terre Haute; Vice-President, A. C. Blinn, Evansville; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, May, 1914; ——— Officers: President, B. C. Adams, Lincoln, Neb.: Secretary, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, October—— 1913. ——— Officers: President, L. O. Ripley, Emporia, Kas.; Secretary and Treasurer, W. H. Fellows, Leavenworth, Kas.

Michigan Gas Association—Annual meeting, September, 17, 18, 19, 1913; ——— Officers: President, W. S. Blauvelt, Detroit, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1913; Mexico, Mo. Officers: President, P. A. Bertrand, Joplin, Mo.; Secretary and Treasurer, P. W. Markham, Brookfield, Mo.

National Commercial Gas Association.—Annual meeting and gas show, Dec. 1-6, 1913. Philadelphia, Pa. Officers: President, C. W. Hare, Philadelphia Pa.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, Cleveland, O., May 20 22, 1913; Officers: President, M. B. Daly, Cleveland, O; Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, February, 18th and 19th, 1914 Boston. Officers: President, T. H. Hintze, Providence, R. I.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—Annual Meeting July —, 1913, Asbury Park N.J. President, C. F. Butcher, Freehold, N. J.; Sec'y-Treasurer, O. F. Potter, Newark, N. J.

Ohio Gas Association.—Annual meeting, February ———, 1913, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

Oklahoma Gas, Electric and Railway Association.—Annual meeting, Oklahoma City May, ——1913. President, F. W. Caldwell, Shawnee, Okla.; Secretary, H. V. Bozell, Norman, Okla.

Pacific Coast Gas Association.—Annual meeting, San Jose, Cal., September 16, 17, 18, 1913. Officers: President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, Henry Bostwick, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, Allentown, Pa., April ———, 1914; Officers, President, J. A. Frick, Allentown, Pa.; Secretary-Treasurer, W. O. Lamson, Jr., West Chester, Pa.

Society of Gas Lighting.—Annual meeting Dec., 11, 1913; monthly meetings, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 29 West 39th street, New York city

Southern Gas Association.—Annual meeting, Mobile, Ala., April 4, 1914, Officers: President, James Ferrier, Rome, Ga.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. May 21, 22, 23 and 24, 1913, Galveston, Tex. Officers: President, F. M. Lege, Jr., Galveston, Tex.; Secretary H. S. Cooper, 405 Slaughter Bldg., Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 14 and 15, 1913, Milwaukee, Wis. Officers: President, I. F. Wortendyke, Janesville, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.